INDUSTRIAL MEDICINE AND SURGERY

Volume 25 NOVEMBER 1956 Number 11

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* PATENT APPLIED FOR

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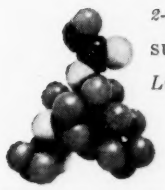

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JAMES P. HUGHES, M.D., of Columbus, Ohio, has been appointed to the newly created position of Medical Director, Kaiser Aluminum & Chemical Corporation. He will assume his new duties March 1, 1957, with headquarters at Oakland, California. He will develop the company's program of occupational medicine and industrial hygiene. This will include the establishment of health and medical standards, the coordination of medical services at all of the company's various field locations, the establishment of an executive health program, and other activities related to occupational medicine and industrial hygiene. DR. HUGHES has had extensive experience in occupational medicine and industrial hygiene. Recently he has been Chief Physician and Medical Consultant for the City of Columbus Employee Health Service, and, for the past two years, Associate Professor of Preventive Medicine at the College of Medicine, Ohio State University. He was Assistant Professor of Industrial Medicine at the Kettering Laboratory, University of Cincinnati, from 1952 to 1955, and served as Chief of the Bureau of Industrial Hygiene of the Cincinnati Health Department. He has been Medical Consultant for the Ethyl Corporation, physician for The Texas Company, and Medical Adviser to numerous other industrial firms. He is a native of Wilkinsburg, Pennsylvania; a graduate of the University of Pittsburgh; received his B.S. in 1944 and his M.D. in 1945; was awarded the degree of Doctor of Industrial Medicine in 1952 at University of Cincinnati. From 1946 to 1948 he was a Captain in the U.S. Army Medical Corps.

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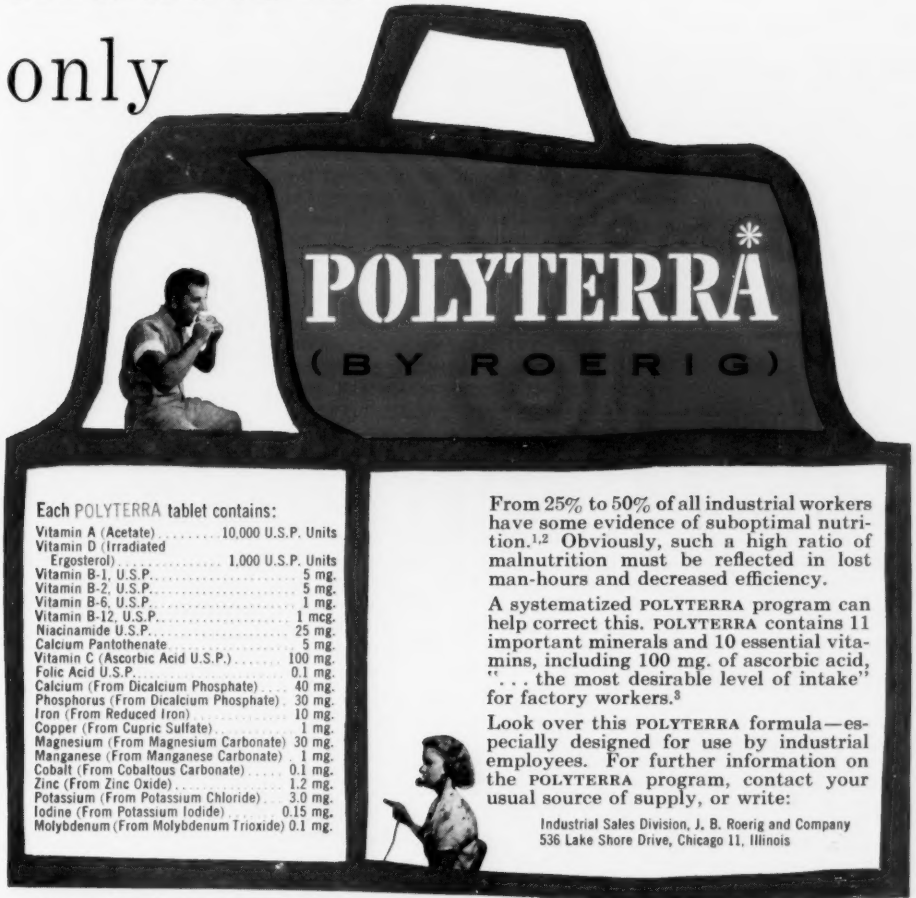

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1. Babcock, M. J., et al: Milbank Mem. Fund Quart.: 32:323 (Oct.) 1954. 2. McLester, J. S. and Darby, W. J.: Nutrition and diet in health and disease. W. B. Saunders and Company, Philadelphia, 1952, p. 584. 3. Pollack, H. and Halpern, S. L.: Therapeutic Nutrition, National Research Council, publication 234, 1952, p. 37.

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R. EMMET KELLY, M.D., will be in charge of scientific exhibit space at the 1957 INDUSTRIAL HEALTH CONFERENCE in St. Louis, April 20-26. Anyone contemplating a scientific exhibit should address inquiries and applications for space to him: R. EMMET KELLY, M.D., Medical Director, Monsanto Chemical Company, St. Louis.

KIEFFER DAVIS, M.D., Medical Director, Phillips Petroleum Corporation, Bartlesville, Oklahoma, received the Individual Industrial Health Award at the Ninth Annual Conference for Business and Industry, Houston, Texas, September 20-22. He was cited for the vigorous and well-organized industrial health program he maintains for Phillips Petroleum.

OTTO TOD MALLERY, JR., M.D., Director of the Institute of Industrial Health, University of Michigan, received the award annually presented to an outstanding group or organization at the Ninth Annual Conference for Business and Industry, Houston, Texas, September 20-22. His Institute's program of research and study was commended.

SOCIEDAD Cubana de Medicina del Trabajo (Cuban Society of Occupational Medicine) announces the new Directive Council that has been elected to direct the activities of the Society during 1956-1958. The officers are: President, FRANCISCO LANCIS Y SANCHEZ, M.D.; Vice-Presidents, MARCEDO DE CATURLA JIMENEZ, M.D., and TOMAS ARAMBURU DIAZ, M.D.; Secretary General, RAFAEL PENALVER BALLINA, M.D.; Treasurer, MANUEL TABOAS GONZALES; Directors, OSWALDO MORALES PATINO, M.D.; BENITO DURAN CASTILLO, M.D.; ANTONIO J. FERNANDEZ MENENDEZ, M.D.; and ALBERTO SUAREZ URGELLES, M.D.

REX H. WILSON, M.D., is Chairman, and JAMES P. HUGHES, M.D., is Secretary of the newly established Section on Industrial Medicine of the Ohio State Medical Society.

FIVE Mexican physicians, DRS. BUSTILLOS, RAUL GARCES, FERNANDO LEIVA, CARLOS VIGIL, and RAMON TERROBA, each holding an important position in the Medical Consultation Office of the Confederation of Mexican Workers (Confederation de Trabajadores de Méjico), have been touring the

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United States under auspices of the International Cooperation Administration. Their purpose is to gain practical information on industrial medicine, industrial hygiene, rehabilitation of workers, workmen's compensation, and safety, with the object of improving hygiene, sanitation, and working conditions to keep up with the "quick" progress of Mexican industry in recent years. Their tour of about six weeks ended early in October; they visited most of the large cities, studying health programs for employees in the more important industries.

ROLAND I. PRITIKIN, M.D., of Rockford, Illinois, represented the Industrial Medical Association at the Eighth International Congress of the History of Science at Florence, Italy, early in September. DR. PRITIKIN read two papers: "History of Treatment of Congenital and Hereditary Eye Defects (With Synopsis)," on September 3, and "History of the Introduction to the Management of Mass Eye Casualties Resulting From Radiation Trauma," on September 7.

MICHIGAN STATE MEDICAL SOCIETY has given added recognition to the growth of industrial medicine as a specialty. For the first time a Section on Occupational Health was included this year in the program of the Annual Meeting, September 26, 1956, Sheraton-Cadillac Hotel, Detroit. C. D. SELBY, M.D. of Port Huron, was Chairman; O. J. JOHNSON, M.D., of Bay City, Secretary. The program topic was "Current Trends in Occupational Health," by SEWARD E MILLER, M.D., Director, Institute of Industrial Health, Ann Arbor.

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HENRY S. BROWN, M.D., a Past-President of the Industrial Medical Association (1947), retired October 1 from his duties as Medical Consultant for the Michigan Bell Telephone Company at Detroit. DR. BROWN served as Medical Director for the Company's Medical Department from 1930 to 1955, when he assumed the position he leaves. He is a native of Providence; graduated from Tufts Medical School at Boston; went to Detroit and entered private practice in 1919 after his discharge from the United States Navy in which he served as a Medical Officer during World War I. Before joining Michigan Bell in 1924, he had been industrial surgeon for General Accident Insurance Company in Detroit. During his 32-year career with Michigan Bell, the Medical Department expanded to meet the needs of the company's growing employment rolls. DR. BROWN developed one of the first visiting nurse programs in the country, which served as a model and pilot group for other industrial medical centers.

DR. R. S. SCHILLING, after a long time as Reader, Nuffield Department of Occupational Health at the University of Manchester, has been promoted to the position of Reader in Occupational Health for the University of London, England. His new address is London School of Hygiene and Tropical Medicine, at the University.

UNIVERSITY of Cincinnati College of Medicine, Institute of Industrial Health, offers a series of courses in Occupational Health for Registered Nurses. These are designed to acquaint the nurses in industry, as well as other interested nurses, with current con-

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cepts and practices in occupational health. The first course is scheduled for the fall of 1956 and will consist of 16 weekly evening sessions. The second, in the spring of 1957, is to be concentrated in one week, full time. The faculty for both courses will include members of the Medical College, and representatives of the nursing profession, and management, together with recognized authorities in this field. For additional information, write: Secretary, Institute of Industrial Health, College of Medicine, Cincinnati 19.

E. LOWELL BERRY, M.D., is the new Chief, Division of Industrial Health, Pittsburgh Department of Health (soon to be reorganized as the Allegheny County Department of Health), and Consultant to the Psychological Service of Pittsburgh. DR. BERRY received his M.D. in 1948, Medical College of Virginia, and an M.P.H. in 1952, Graduate School of Public Health, University of Pittsburgh. He was with Armco Steel Corporation, Mining Division, Montcoal, West Virginia, on a part-time basis from 1948 to 1951, and in 1953 completed a full-time residency in industrial medicine at Eastman Kodak Company, Rochester. He recently served as Industrial Physician at the Boston Naval Shipyard.

NEW YORK STATE SOCIETY OF INDUSTRIAL MEDICINE, INC., will hold its annual professional and business meeting at Hotel Roosevelt, New York, December 6, 1956. The program will include: "Radioactivity and Its Applications, With Particular Reference to Industry"—S. ALAN LOUGH, Ph.D., Deputy Director, Health and Safety Laboratory, Atomic Energy Commission, New York; "Radioactive Fall Out"—JOHN HARLEY, Ph.D., Chief, Analytical Branch, Health and Safety Laboratory, AEC, New York; and "Biologic Effects of Radiation"—HARRY BLAIR, Ph.D., Director, Atomic Energy Project, University of Rochester School of Medicine and Dentistry. Send reservations to: HARRY TEBROCK, M.D., 1740 Broadway, New York 19.

MARION B. SULZBERGER, M.D., Director, announces that a number of dermatologic research and teaching fellowships have been made available at the New York Skin and Cancer Unit, New York University-Bellevue Medical Center. One of these is for dermatologists who have completed their three-year, full-time training in dermatology, and are desirous of embarking on or continuing in a research or teaching career in special fields of dermatology — immunology, mycology, oncology, physiology, radiation (including radioactive isotopes). Applicants may apply to: The Director, Service of Dermatology, New York Skin and Cancer Unit, 330 Second Avenue, New York.

THE COUNCIL ON INDUSTRIAL HEALTH, American Medical Association, 535 North Dearborn Street, Chicago, has available the publication, "Absence from Work Due to Non-Occupational Illness and Injury," proceedings of the session on work absence of the 16th Annual Congress on Industrial Health held in January, 1956. This is the work of the Committee on Medical Care for Industrial Workers, a joint committee of the Council on Industrial Health and the Council on Medical Service of the AMA. It contains the statements of 22 representatives of medicine, management, and labor who participated in four panel discussions dealing with the topics: "Where Are We?"; "What Are We Doing?"; "What Can We Do?"; and "How Can We Make Better Use of Records?" Single copies are without charge from the Committee on Medical Care for Industrial Workers. Another publication, "Guiding Principles of Medical Examinations in Industry," reprinted from *J.A.M.A.* July 7, 1956, is also available in pamphlet form. Single copies will be furnished by the Council on Industrial Health. Requests for multiple copies should be addressed to the Order Department, American Medical Association.

AMERICAN Fracture Association will hold its Annual Meeting at the Drake Hotel, Chicago, November 29-December 1. The Association has also scheduled an instruction course in fractures in conjunction with the Cook County Postgraduate School to be held November 28. Additional information from the Secretary-General, H. W. WELLMERLING, M.D., 610 Griesheim Building, Bloomington, Illinois.

GORDON M. MEADE, M.D., Chief of Clinical Services at the Wil-

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LOS ANGELES

liamson, West Virginia Memorial Medical Center, has been appointed Clinical Director of the Miners Memorial Hospital Association, a chain of 10 hospitals serving beneficiaries of the United Mine Workers Welfare and Retirement Fund. During the last year DR. MEADE has served as Clinical Consultant with headquarters in Washington, D.C. He will succeed AIMS C. MCGUINNESS, M.D., who, after recruitment and organization of the hospital medical staffs, will return to private practice and teaching of pediatrics in Philadelphia. The newly-opened hospitals were dedicated June 2 at Beckley, West Virginia.

THE INTERNATIONAL Congress of Nurses will be held in Rome, Italy, May, 1957. Illinois State Nurses Association has arranged a special tour leaving Chicago May 12 for 22 days in Scotland, England, France, Italy, and Switzerland. A feature will be the optional seminars in hospitals in several cities, which will provide an opportunity to observe professional procedures and techniques in the European manner. One of the tours will be offered as a prize in connection with ISNA's 1957 membership campaign.

PENNSYLVANIA'S Governor, GEORGE M. LEADER, on September 14, acclaimed 22 year old industrial worker, ROMUALDO GALLO as the 10,000th member of the Wise Owl Club of America, which recognizes those whose vision has been saved by wearing eye protective equipment during in-plant accidents (*Indust. Med. & Surg.*, 25:7, 45 (July) 1956). Witnessing the ceremony in the Governor's Harrisburg offices were Gallo's wife and JAMES E. O'NEIL, Director of Industrial Service of the National Society for the Prevention of Blindness, sponsor of the Wise Owl Club.

FRANCIS J. BRACELAND, M.D., Medical Director, Institute for Living, Hartford, Connecticut, will present the Fifth Annual DR. FRED H. ALBEE Memorial Lecture at the Kessler Institute for Rehabilitation, Pleasant Valley Way, West Orange, New Jersey, November 10, 1956. DR. BRACELAND'S topic will be "The Role of Psychiatry in Rehabilitation," and the program will include significant case presentations by members of the medical staff of the Kessler Institute for Rehabilitation.

SEWARD E. MILLER, M.D., recently appointed Director, Institute of Industrial Health, University of Michigan, Ann Arbor, has also been appointed Professor in Internal Medicine in the Medical School, and Professor in Occupational Health in the University of Michigan's School of Public Health.

CENTRAL STATES SOCIETY OF INDUSTRIAL MEDICINE AND SURGERY is holding its December meeting at Palmer House, Chicago, Sunday, December 2, 1956, with the following program: "The Employability of Cardiacs" —OGLESBY PAUL, M.D.; "Re-employment of the Ex-T.B. Patient by Industry"—KARL H. PFUETZE, M.D.; "Recent Advances in Surgery of Trauma"—JOSEPH M. DZIOB, M.D.; "Amputations and the Newest Developments in Prostheses"—ROBERT G. THOMPSON, M.D., and "Railroads Approach to Medical Legal Problems"—K. A. CARNEY.

HEDWIG S. KUHN, M.D., of the Joint Committee of Industrial Ophthalmology, American Academy of Ophthalmology and Otolaryngology, and American Medical Association, at the Thirty-Third Annual Meeting of the Association of Surgeons of the New York Central System, Hotel Statler, Boston, October 3, discussed "Modern Techniques for the Management of Industrial Eye Problems."

WILLIAM G. FREDRICK, Sc.D., Director, Bureau of Industrial Hygiene, Detroit Health Department, has received the 1956 Anachem Award from the Association of Analytical Chemists, an Affiliate Society of the Detroit Section of the American Chemical Society, for his many contributions to analytical chemistry, particularly in the field of industrial health and air pollution.

ARTHUR L. HARDIE, JR., M.D., Jacksonville, Florida, has been elected Secretary of the Surgeons' Association of the Atlantic Coast Line Railroad.

MASSACHUSETTS Medical Society's Committee on Industrial Health has a note on "Benzene Hazards" in the *New England Journal of Medicine*, August 2, 1956, prepared by GEORGE F. MORRIS, M.D. In addition to DR. MORRIS, this Committee includes GEORGE F. WILKINS, M.D., *Chairman;* HENRY C. MARBLE, M.D.; KARL T. BENEDICT, M.D.; HARRIET L. HARDY, M.D.; ALBERT O. SEELER, M.D.; and JERMYN F. MCCAHAN, M.D.

LOUIS W. SPOLYAR, M.D., Director, Division of Industrial Hygiene, Indiana State Board of Health, describes "The Commonly Used Toxic Solvents," in *Wisconsin Medical Journal*, September, 1956.

ROBERT E. ECKARDT, M.D., Ph.D., Medical Research Division, Esso Research and Engineering Company, Linden, New Jersey, at the 150th Annual Meeting of the Medical Society of the State of New York, Section on Industrial Medicine and Surgery, May 9, 1956, presented a study on "Environmental Cancer and Its Relationship to Industry, the Physician, and the Community." This was published in *New York State Journal of Medicine*, August 15, 1956.

JOHN D. BEALER, M.D., has been appointed Medical Director, A. E. Staley Manufacturing Company, Decatur, Illinois. DR. BEALER received his M.D. at Jefferson Medical College, 1948, and is a graduate of the School of Public Health, University of Pittsburgh, 1954. While with the U.S. Navy, he established an industrial medical program at the U.S. Naval Clothing Depot, Brooklyn, 1948.

WILLIAM C. MARSHALL, M.D., has joined the staff of Tennessee Eastman Company, Kingsport, Tennessee, September 7, as a full-time physician. DR. MARSHALL received his M.D. from the University of Pittsburgh, 1950. He has done part-time industrial medical work for Pennsylvania Railroad,

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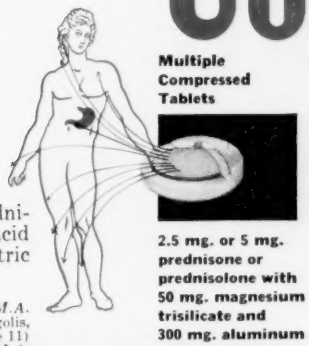

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References: 1. Boland, E. W., *J.A.M.A.* **160**:613 (February 25) 1956. 2. Margolis, H. M. *et al.*, *J.A.M.A.* **158**:454 (June 11) 1955. 3. Bollet, A. J. *et al.*, *J.A.M.A.* **158**:459 (June 11) 1955.

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Pittsburgh, and Westinghouse APD, Pittsburgh. He served with the U.S. Army Air Corps, 1943-46, and U.S. Air Force Medical Corps, 1950-53.

WILLIAM P. SHEPARD, M.D., Chairman, Council on Industrial Health, American Medical Association, talked on "Workmen's Compensation Emphasis on Rehabilitation" at a joint meeting of the Sections on Industrial Medicine and Surgery, and Orthopedics, 85th Annual Session, California Medical Association, Los Angeles, April 29-May 2, 1956. This "Guest Speaker's Address" appears in *California Medicine*, September, 1956.

R. LOMAX WELLS, M.D., Medical Director, The Chesapeake and Potomac Telephone Companies, Washington, D.C., published "The Problem of Disability Certification" in *Southern Medical Journal*, May, 1956. This was quoted in *Current Medical Digest*, September, 1956.

PETER J. DI NATALE, M.D., HARRY E. TEBROCK, M.D., and MELVIN N. NEWQUIST, M.D., are members of the Council Committee on Industrial Health of the Medical Society of the State of New York.

THOMAS M. RIVERS, M.D., has been named Medical Director of the National Foundation for Infantile Paralysis. Prior to this appointment, DR. RIVERS was Vice-President of the Rockefeller Institute for Medical Research.

GORDON W. GRAY, M.D., has become associated with W. G. BESSMER, M.D., in the practice of traumatic and industrial surgery in Davenport, Iowa. DR. GRAY is a Diplomate of the American Board of Surgery; has been Staff Surgeon at the Veterans Administration Hospital in Des Moines.

AMONG the full-time courses offered by the Post-graduate Medical School of New York University-Bellevue Medical Center during December, is a six-day course on Diagnosis and Treatment of Trauma, beginning December 3. It is planned for those physicians who are now, or expect to be, concerned with industrial or civilian injuries of all types.

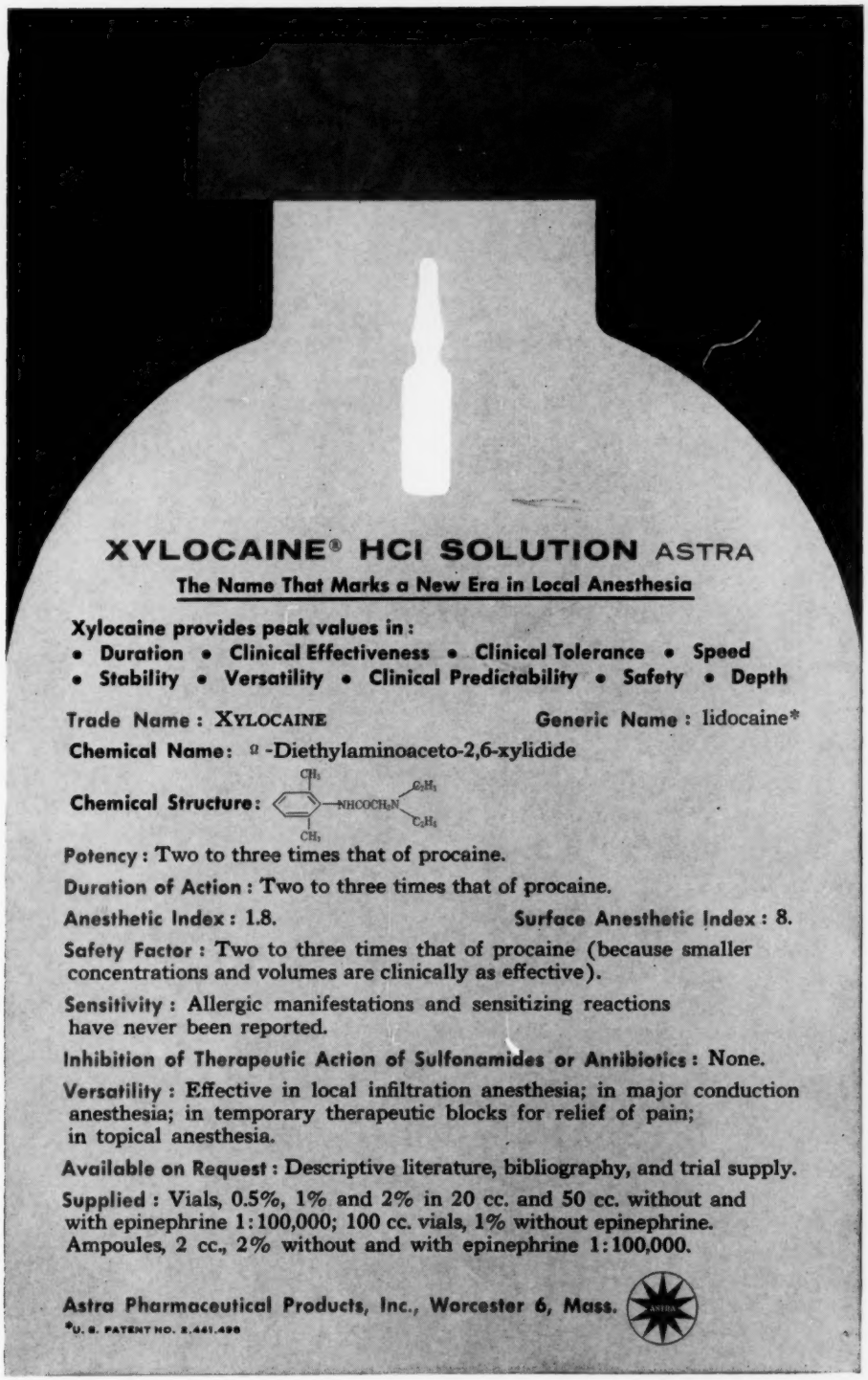
OHIO STATE UNIVERSITY Health Center is offering a resident specialty training program in aviation medicine and occupational medicine. The course involves, first year: environmental physiology, applied toxicology, engineering concepts, occupational health principles, physical medicine and rehabilitation, personnel management, workmen's compensation law, clinicopathologic conference, and in-plant practice. Second year: preventive medicine, industrial hygiene, biometry, safety engineering practice, human engineering, interdepartmental seminar, plant visits, special problems, supervised research, and in-plant practice. Third year: aviation medicine—residence as Special Assistant to the Medical Director of an aircraft manufacturing company or passenger airline; or, occupational medicine—residence as Special Assistant to the Medical Director of an industrial organization of national scope and accredited employee health service. Address inquiries to: Chairman, Department of Preventive Medicine, Health Center, Ohio State University, Columbus.

Hawaii

TERRITORIAL ASSOCIATION OF PLANTATION PHYSICIANS has arranged the following program of a meeting of the plantation physicians, the Board of Health, and the certified specialists of Hawaii, is being held November 8-11, 1956, at Lihue, Kauai, Hawaii. *On Thursday*, November 8: President MARVIN BRENNECKE, M.D., presiding: "Spontaneous Pneumothorax"—PAUL A. THOMAS, M.D.; "Which Positive Blood Test Means Syphilis?"—SAM ALLISON, M.D.; Panel Discussion—"The Team Work Approach on Rehabilitation"—FREDERICK R. SHEPHARD, M.D., IVAR LARSEN, M.D., ANGIE CONNOR, M.D., and TORU NISHIGAYA, M.D.; Comments on "Industrial Medicine in Japan"—K. W. AMANO, M.D.; Panel Discussion—"Possible Eradication of Tuberculosis in Hawaii"—HASTINGS WALKER, M.D.; ROBERT MARKS, M.D., PETER KIM, M.D., ROBERT P. HENDERSON, M.D., and EDMOND TOMPKINS, M.D. *On Friday*, November 9: Panel Discussions: "The Use of Tranquilizing Drugs in the Care of Emotional Problems"—ROBERT M. SPENCER, M.D., PERSHING LO, M.D., Y. T. WONG, M.D., R. D. KEPNER, M.D., and J. I. F. REPPUN, M.D.; "Allergy in Childhood"—F. D. NANCE, M.D., CLARENCE SUGIHARA, M.D., ALBERT HO, M.D., K. W. AMANO, M.D., and MARVIN BRENNECKE, M.D.; "Enteric Diseases and Their Control in the Territory"—JAMES ENRIGHT, M.D., ARCHIE ORENSTEIN, M.D., F. H. TONG, M.D., W. E. IACONETTI, M.D., and MAX LEVINE, M.D.; trip to inspect new Eleele Out-Patient Clinic, and Kauai Veterans Memorial Hospital; Public Meeting—Parish Hall, Lihue: "What Is Being Done About Heart Disease Today"—NILS P. LARSEN, M.D., Honolulu, and ROBERT WILKINS, M.D., Boston, President-Elect, American Heart Association. *On Saturday*, November 10: Panel Discussions: "How to Meet the Problem of Rising Hypertension on the Plantations"—NILS P. LARSEN, M.D., KEITH KUHLMAN, M.D., CLYDE ISHII, M.D., ROBERT WILKINS, M.D., LOUIS S. ROCKETT, M.D., and K. W. AMANO, M.D.; "Asphyxia in the Newborn"—CLIFFORD KOBAYASHI, M.D., IRVINE McQUARRIE, M.D., CLIFFORD K. W. CHOCK, M.D., and JAMES T. S. WONG, M.D.; "Maternal Deaths in the Territory Over the Past Five Years"—SATORU NISHIJIMA, M.D., K. S. TOM, M.D., WILLIAM PATTERSON, M.D., and Captain JAMES P. MORAN, M.D., USN, Chief, Department Obstetrics and Gynecology, Tripler Hospital, Fugate Carty; Banquet—followed by presentation of Certificate of Appreciation to "Old Timers"; "Japan the Beautiful"—K. W. AMANO, M.D., Guest Speaker.

Miami

THE SECOND SYMPOSIUM on Industrial Medicine and Toxicology, will be held December 14-15, 1956, at the School of Medicine, University of Miami, Coral Gables, Florida. The Program will include: *December 14:* Moderators: MR. R. DURRANCE and C. A. D'ALONZO, M.D.: "What Industrial Medicine Contributed to Industry"—EDWARD C. HOLMBLAD, M.D.; "What the Practicing Physician Needs to Know About Clinical Toxicology"—ROBERT E. ECKARDT, M.D.; "Why Safety and Medical Departments Work Together"—P. W. LOGAN; Moderators: E. C. HOLMBLAD, M.D., and ROBERT E. ECKARDT, M.D.; "Fundamentals of Workmen's Compensation Laws"—RODNEY DURRANCE; "What Industry Wants from Medicine"—WILLIAM H. SEYMOUR; "Case Handling Under Workmen's Compensation Laws"—HERMAN J. BROWN; "How to Evaluate a Disabled Employee"—W. G. THUSS, M.D.; "Thermal Decomposition of Compounds and the Effects on Toxicity"—J. F. TREON, Ph.D.; Moderators: W.



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MACHLE, M.D., and J. RADOMSKI, M.D.: "Fundamentals of Industrial Medicine"—KIEFFER DAVIS, M.D.; "Part-Time Employee Health Service"—LOGAN T. ROBERTSON, M.D.; "Fluoride Metabolism as Related to Water Fluoridation"—HAROLD C. HODGE, Ph.D.; Moderators: KIEFFER DAVIS, M.D., and B. L. VOSBURGH, M.D.; "Industrial Pulmonary Carcinoma"—WILLARD MACHLE, M.D.; "Crotalus Adamanteus, Its Toxicity and Treatment of Intoxications"—WILLIAM B. DEICHMANN, Ph.D., JOHN J. FARRELL, M.D., and M. L. KEPLINGER, Ph.D.; "Mechanism of Action of Snake Venom"—J. RADOMSKI, M.D.; "Occupational Psychiatry Through the Medical Periscope"—C. A. D'ALONZO, M.D.; "Diagnosis and Treatment of Manganese Intoxication"—RAFAEL PENALVER BALLINA, M.D.; *December 15:* Moderators: WILLIAM B. DEICHMANN, Ph.D., and H. W. GERARDE, M.D.: "The Communication Lines and Problems of a Toxicology Laboratory Working for Industry"—HENRY F. SMYTH, JR., Ph.D.; "Toxic Effects of Chemicals on the Hemopoietic System"—RALPH JONES, JR., M.D., and ULFAR JONSSON, M.D.; "Importance of Ozone in Air Pollution, and Factors Influencing its Toxicity"—HERBERT E. STOKINGER, Ph.D.; "Short Wave Radiation"—B. L. VOSBURGH, M.D.; Moderators: RALPH JONES, JR., M.D., and H. F. SMYTH, JR., Ph.D.: "The Toxicity and Metabolism of the Phenylalkanes"—HORACE W. GERARDE, M.D., Ph.D.; "Factors Influencing Deposition of Aerosols in the Lungs"—EDWARD D. PALMES, Ph.D.; "Demyelination in Relation to Organic Phosphate Insecticides"—THOMAS TUSING, M.D.; "Toxicological Investigations Related to the Artificial Coloring of Oranges"—C. BOYD SHAFFER, Ph.D.; Moderator: H. K. EDWARDS, M.D.: Lunch as guests of Eastern Air Lines; "Demonstration of First Aid at Eastern Air Lines"—HOWARD K. EDWARDS, M.D.; Visits to Pharmacology Research Laboratory, South Campus, and Miami Serpentarium; Banquet: Guest of Honor and Principal Speaker: E. S. JONES, M.D., President, Industrial Medical Association.

AEC Fellowships

ATOMIC Energy Commission offers Fellowships which provide advanced training and on-the-job experience in industrial medicine, particularly in relation to the atomic energy industry. Selection of Fellows is made on recommendation of the Committee on A.E.C. Fellowships in Industrial Medicine. Eight Fellowships will be available for the academic year, 1957-1958. These are open to men and women physicians who are citizens of the United States, have graduated from an approved College of Medicine at least two years prior to beginning tenure of the Fellowship, and are licensed to practice medicine in one of the states or territories of the United States. The training program consists of two parts: (1) An academic year, with lecture and laboratory instruction in industrial medicine, industrial hygiene, industrial toxicology, nuclear physics, biophysics, biostatistics, and public health aspects of occupational medicine. (2) An in-plant year, in which the Fellow will be assigned to one or more of the Medical Departments of the major operating plants and laboratories under AEC direction. The in-plant year will be given at AEC contractor installations such as Oak Ridge, Tennessee; Los Alamos, New Mexico; Richland, Washington. Members of the Committee are: FRANK A. PRINCI, M.D., Chairman, Assistant Director, Institute of Industrial Health, University of Cincinnati; PHILIP DRINKER, Ph.D., Professor of Industrial Hygiene, School of Public Health, Harvard University; A. G. KAMMER, M.D., Professor of Occupational Health, Graduate School of Public Health, University of Pittsburgh, and Medical Director, Carbide and Carbon Chemicals Company; L. C. MCGEE, M.D., Medical Director, Hercules Powder Company, Wilmington, Delaware; J. WISTER MEIGS, M.D., School of Public Health, Yale University; W. D. NORWOOD, M.D., Medical Director, General Electric Company, Hanford Atomic Products Operation, Richland, Washington; JOSEPH A. QUIGLEY, M.D., Director of Health and Safety, National Lead Company of Ohio, Cincinnati; CHARLES L. DUNHAM, M.D., Ex Officio Member, Director, Division of Biology and Medicine, AEC, Washington, D.C.; JAMES H. STERNER, M.D., Ex-Officio, Medical Director, Eastman Kodak Company, Rochester, and Consultant in Industrial Health, AEC; HENRY A. BLAIR, M.D., Secretary, Director, Atomic Energy Project, University of Rochester. Address inquiries to DR. BLAIR.

Deaths

JUDSON C. FISHER, M.D., 70, at Sunbury, Pennsylvania. DR. FISHER earned his M.D. at Columbia University College of Physicians and Surgeons in 1913 and took postgraduate work in industrial medicine, University of Pittsburgh, 1940. He has been in industrial practice since 1915 when he was affiliated with Globe Indemnity Company. He was engaged in industrial medicine with Pennsylvania and Long Island Railroad Companies, Commercial Union Insurance Group, Fairchild's Camera & Precision Instrument Company, and Schaefer Brewing Company where he was Medical Director. He was a Fellow and Past Director of the Industrial Medical Association.

GAYLORD R. HESS, M.D., 66, September 2 at Milwaukee. DR. HESS received his M.D. at Rush Medical College and was postgraduate resident physician at St. Luke's Hospital, Chicago, 1929-1932. He had been in industrial medical practice since 1932, and was Medical Director, Sherwin Williams Company, 1932-1941. With the American College of Surgeons, he was engaged in the ACS surveys of Medical Departments until that work was taken over by the Industrial Medical Association in 1950. He was a member of American Medical Association, Illinois Medical Society, Chicago Medical Society, and Industrial Medical Association.

CHARLES A. TEIFER, M.D., 64, June 6 at Muskegon, Michigan, of acute posterior myocardial infarction. DR. TEIFER received his M.D. at Wayne University, 1916, and entered general practice in traumatic and industrial surgery. He had done industrial medical work for Continental Motors, American Store Equipment Company, Greyhound Lines, Wolverine Express, Blue Arrow and Tranger Company, and was Medical Director for Brunswick Balke Collander Company. He was a Past-President of Muskegon County Medical Society; at one time a member of the Michigan State Board of Registration in Medicine; for many years physician for Muskegon High School football teams and other high school athletic activities. He was a Fellow of the Industrial Medical Association and the American Medical Association.

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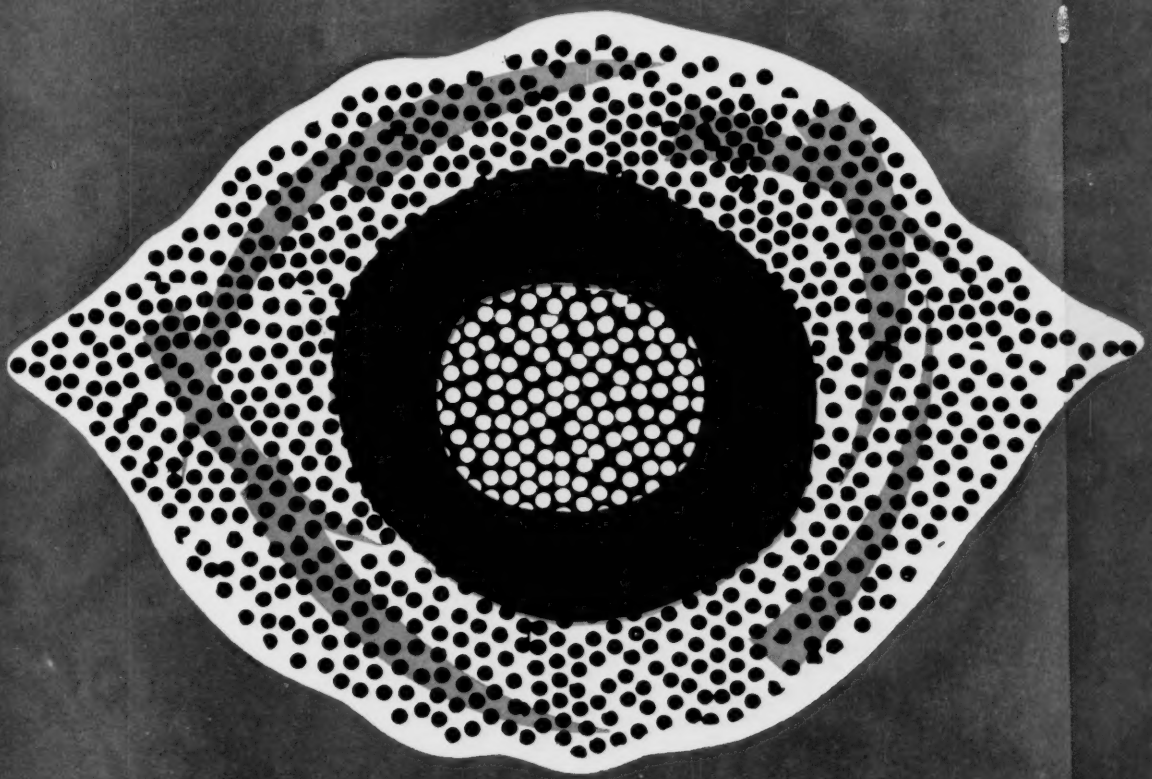

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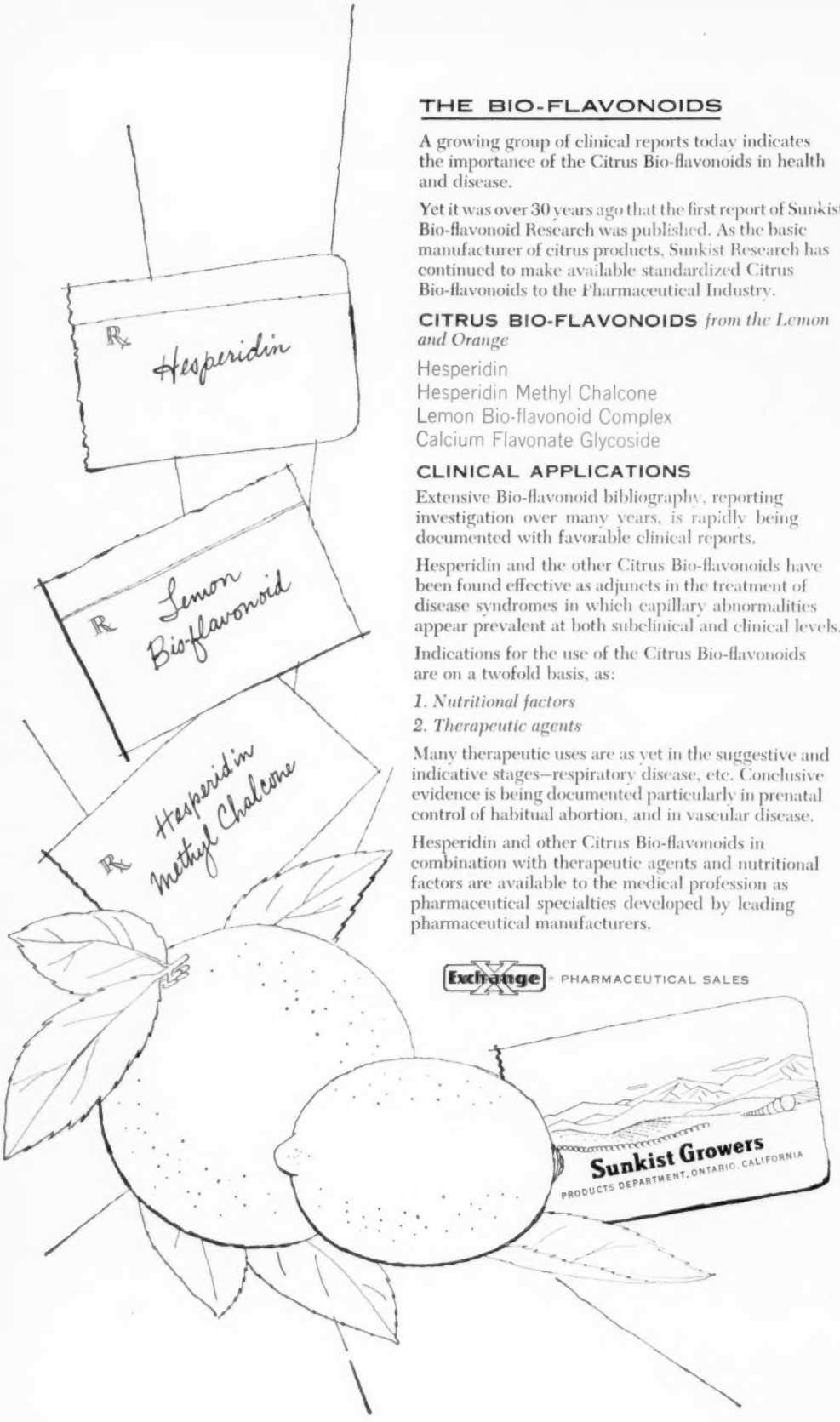

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*Send for reprint—LeVan, P., Sternberg, T. H. & Newcomer, V. D.: California Medicine 81:210, 1954.

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is persistent

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1. Grayzel, H. G., Heimer, C. B., and Grayzel, R. W.: New York St. J. M. 53:2233, 1953.
2. Heimer, C. B., Grayzel, H. G., and Kramer, B.: Archives of Pediatrics 68:382, 1951.
3. Behrman, H. T., Combes, F. C., Bobroff, A., and Leviticus, R.: Ind. Med. & Surg. 18:512, 1949.
4. Turell, R.: New York St. J. M. 50:2282, 1950.

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one of the most frequent symptoms for which the patient seeks medical attention."[1]

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Cough Syrup

...relieves the cough due to colds
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Synephricol acts by prompt and prolonged decongestion of bronchial mucous membranes, by mild central sedation, and by decreasing sensitivity of the pharyngeal mucosa through antihistaminic action.

FORMULA:
(4 cc. teaspoonful)

Neo-Synephrine® hydrochloride	5.0 mg.
Thenfadil® hydrochloride	4.0 mg.
Dihydrocodeinone bitartrate*	1.33 mg.
Potassium guaiacol sulfonate	70.0 mg.
Ammonium chloride	70.0 mg.
Menthol	1.0 mg.
Chloroform	0.0166 cc.
Alcohol	8%

**Exempt narcotic*

DOSAGE:

Adults—1 or 2 teaspoonfuls every two to four hours, not to exceed 5 doses in twenty-four hours.

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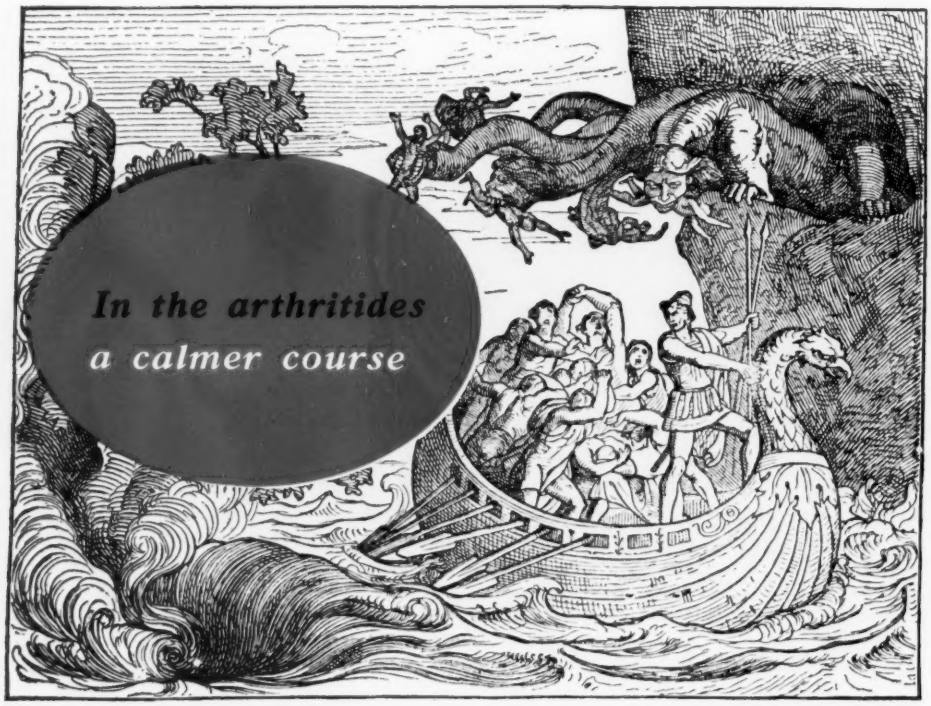
BOTTLES OF 1 PINT AND 1 U. S. GALLON.

Winthrop LABORATORIES
NEW YORK 18, N. Y. • WINDSOR, ONT.

1. Banyai, A. L.: Management of Cough in Daily Practice. *J.A.M.A.*, 148:501, Feb. 16, 1952.

Synephricol, Neo-Synephrine (brand of phenylephrine) and Thenfadil (brand of thenyldiamine), trademarks reg. U.S. Pat. Off.



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between the hazards of high steroid dosage
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One study concludes: "Salicylate potentiates the greatly reduced amount of cortisone present so that its full effect is brought out without evoking undesirable side reactions."[1]

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each tablet contains:

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Calcium ascorbate. . . .	60.0 mg.
(equivalent to 50 mg. ascorbic acid)	
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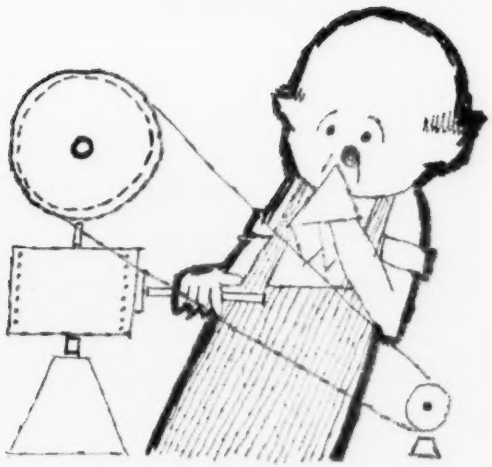
[1]*Busse, E.A.: Treatment of Rheumatoid Arthritis by a Combination of Cortisone and Salicylates. Clinical Med.* 11:*1105*

*U.S. Pat. 2,691,662

The S. E. MASSENGILL COMPANY, Bristol, Tennessee • New York • Kansas City • San Francisco



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Wintertime's increased incidence of colds can cut sharply into production schedules and efficiency ratings.

But now . . . for just a fraction of the cost of lost man-hours . . . you can reduce lost-time due to cold symptoms with this new CORYBAN "anti-cold" program.

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Salicylamide	230 mg.
Acetophenetidin	130 mg.
Caffeine	30 mg.
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Dosage: As directed on package.
Supplied: Bottles of 12 capsules.

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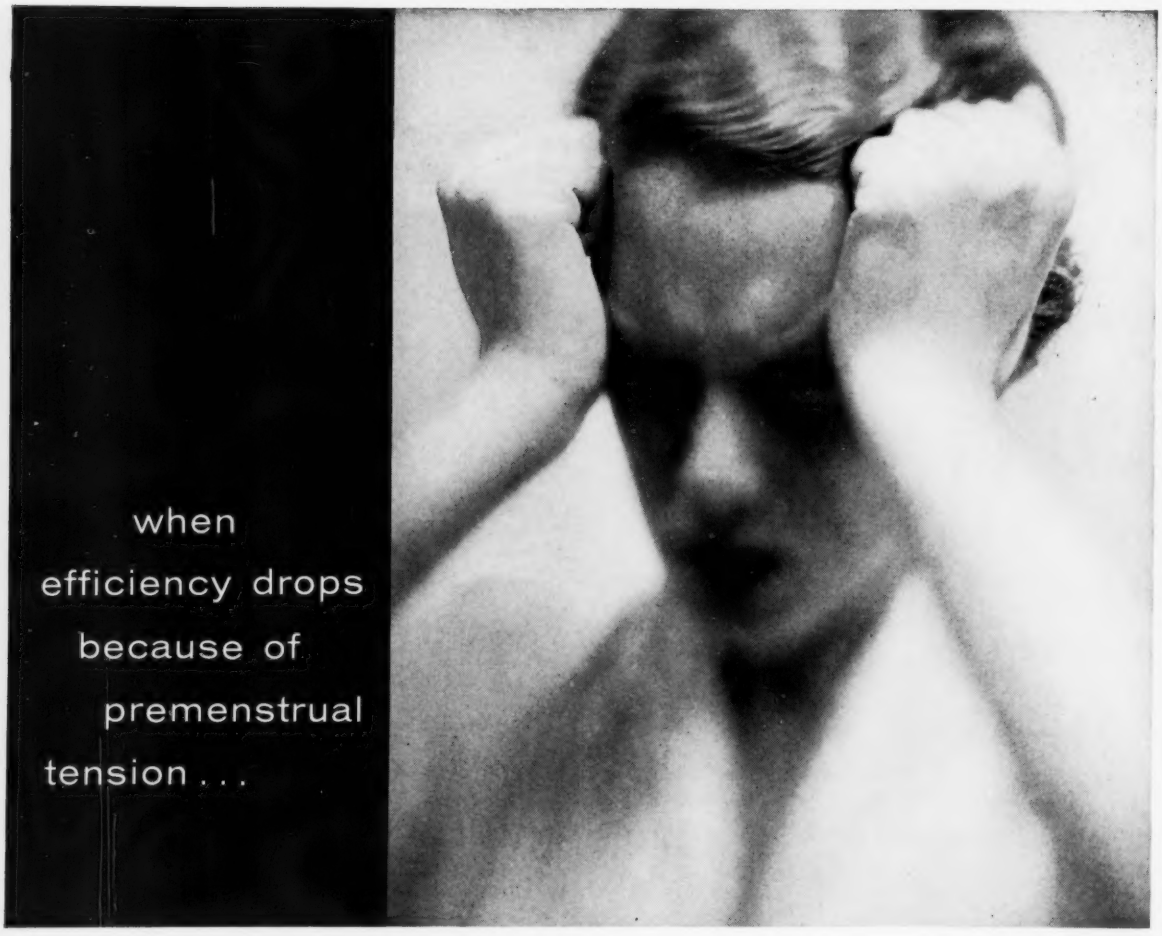

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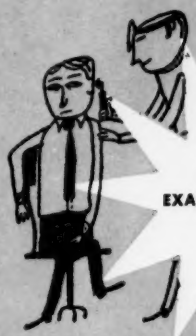
rapid acting . . . deeply penetrating . . .

topical anesthesia

• Xylocaine Ointment (a new form of the widely accepted Xylocaine) is an unusually effective topical anesthetic free of irritating, sensitizing or toxic reactions.



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• Available in a nonstaining, water soluble vehicle as 2.5% and 5% Xylocaine base in collapsible tubes (5% also available in wide-mouth jars) each containing 35 grams (approx. 1.25 ounces).

XYLOCAINE® OINTMENT ASTRA

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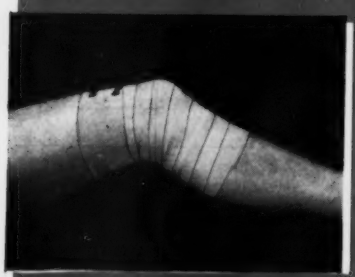

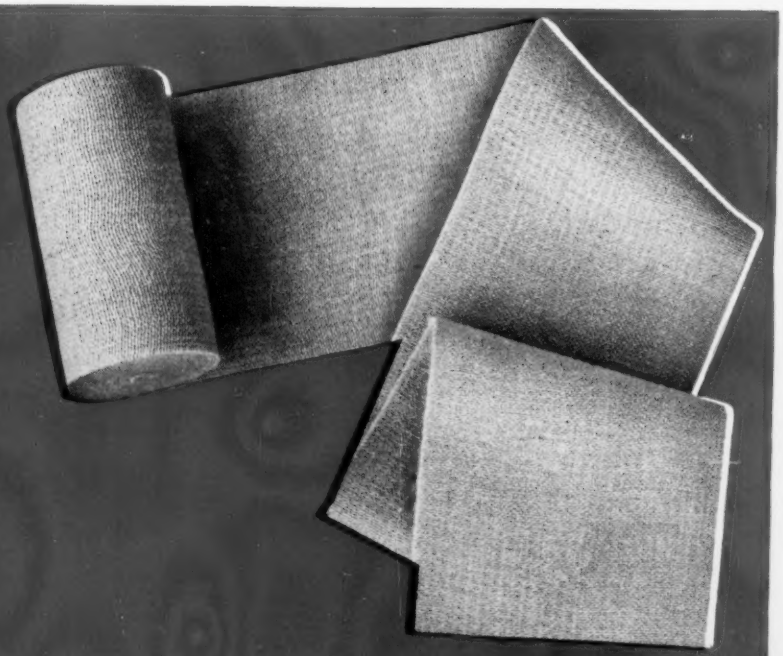

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now individually wrapped in cellophane for greater protection and cleanliness.

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more effective than one
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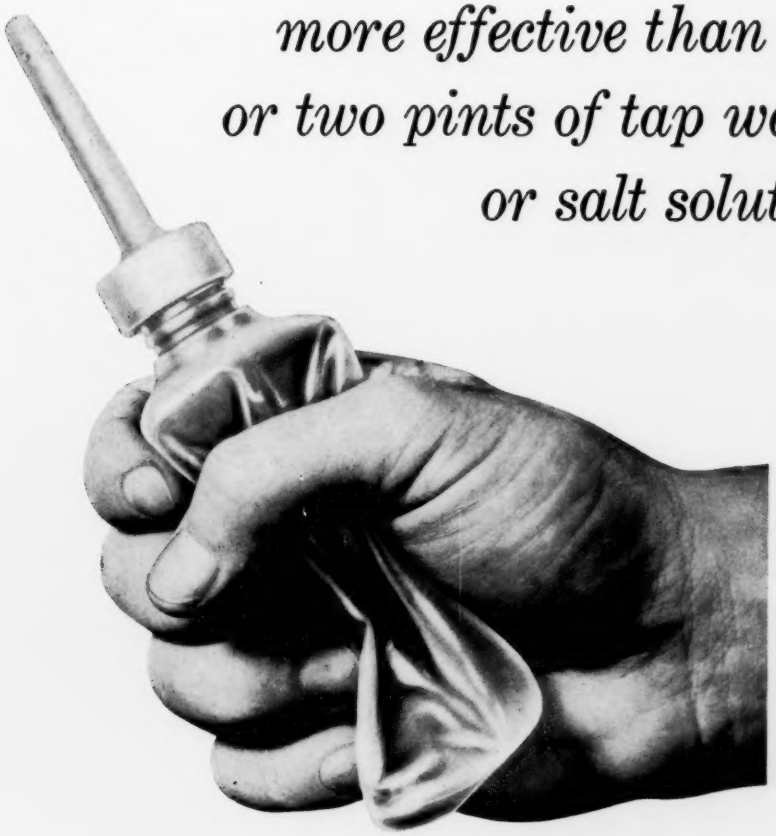

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Write for descriptive booklet.

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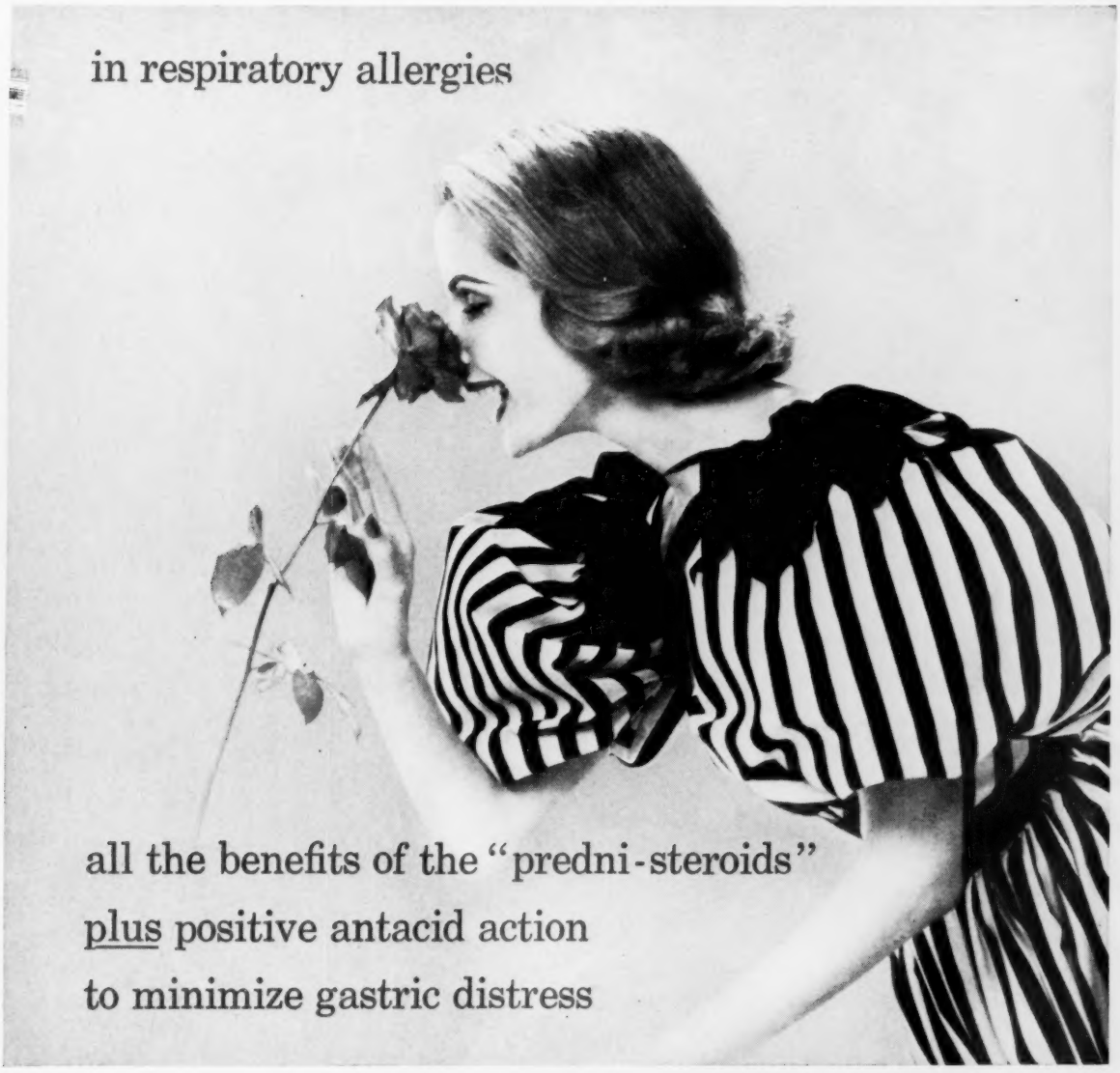

all the benefits of the "predni-steroids"
plus positive antacid action
to minimize gastric distress

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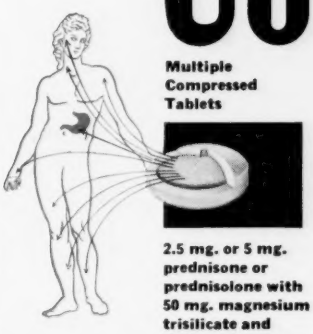
(Prednisone Buffered)

Multiple Compressed Tablets



2.5 mg. or 5 mg. prednisone or prednisolone with 50 mg. magnesium trisilicate and 300 mg. aluminum hydroxide gel.

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(Prednisolone Buffered)

Clinical evidence[1,2,3] indicates that to augment the therapeutic advantages of prednisone and prednisolone, antacids should be *routinely* co-administered to minimize gastric distress.

References: 1. Boland, E. W., *J.A.M.A.* **160**:613 (February 25) 1956. 2. Margolis, H. M. *et al.*, *J.A.M.A.* **158**:454 (June 11) 1955. 3. Bollet, A. J. *et al.*, *J.A.M.A.* **158**:459 (June 11) 1955.

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araxoid*

prednisolone and hydroxyzine

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combining the newest, safest tranquilizer, ATARAX® + the newest, most effective steroid, STERANE® (prednisolone)

simultaneously controls the symptoms and the apprehension

In Rheumatoid Arthritis, other collagen diseases, bronchial asthma and inflammatory dermatoses

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THORAZINE* *can help your patients to endure the suffering caused by* *severe pain*

for example: ***in burns***

Thorazine's ataraxic, tranquilizing action can reduce the suffering caused by the pain of severe burns. 'Thorazine' acts, not by eliminating the pain, but by altering the patient's reaction—enabling him to view his pain with what has been described as "serene detachment." Karp et al.,[1] reporting on the use of 'Thorazine' in patients with severe pain, observed that 'Thorazine' produced "a quiet, phlegmatic acceptance of pain."

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'Thorazine' is available in ampuls, tablets and syrup (as the hydrochloride), and in suppositories (as the base).

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*T.M. Reg. U.S. Pat. Off. for chlorpromazine, S.K.F.

1. Karp, M., et al.: Am. J. Obst. & Gynec. 69:780 (April) 1955.

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*Jessup, R., Murray, R. J. and Rossi A.: Am. Pract. & Dig. Treat. 5:792, 1954.

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(1) Abrahamsen, E. H., and Baird, H. W., III: J.A.M.A. *160*:749 (Mar. 3) 1956.
(2) Amols, W.: J.A.M.A. *160*:742 (Mar. 3) 1956.
(3) Rodriguez-Gomez, M.; Valdes-Rodriguez, A., and Drew, A. L.: J.A.M.A. *160*:752 (Mar. 3) 1956.
(4) Smith, R. T.; Kron, K. M.; Peak, W. P., and Hermann, I. F.: J.A.M.A. *160*:745 (Mar. 3) 1956.

*T.M. †U. S. Patent Pending

FLEXIN is sufficiently safe

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"When it [FLEXIN] was administered orally in doses of 250 to 500 mg. three and four times a day, 14 of 18 patients with spasticity due to spinal cord lesions showed objective improvement of spasticity."[3]

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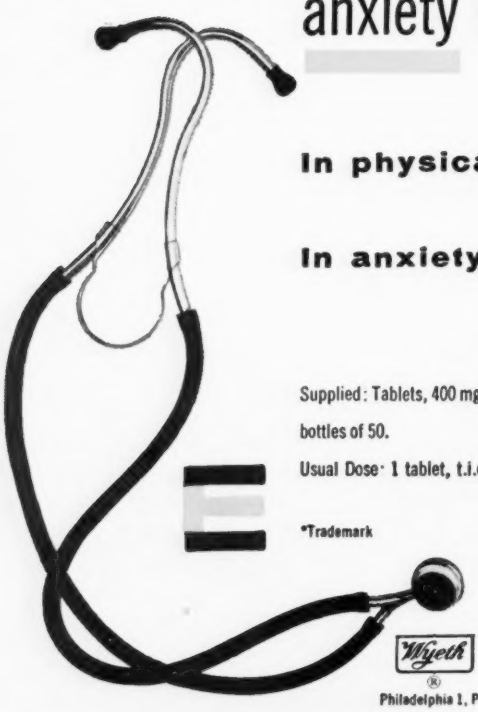

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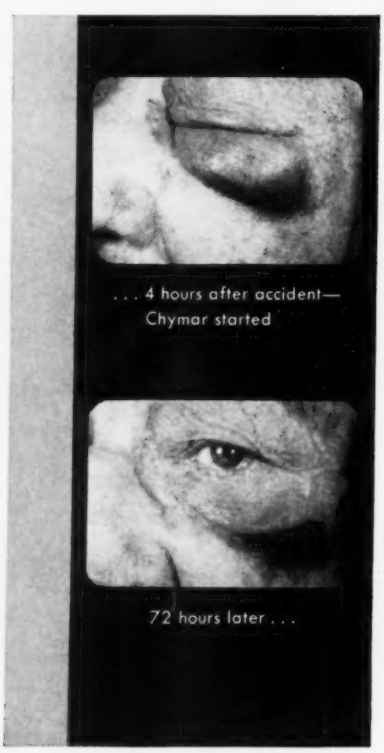

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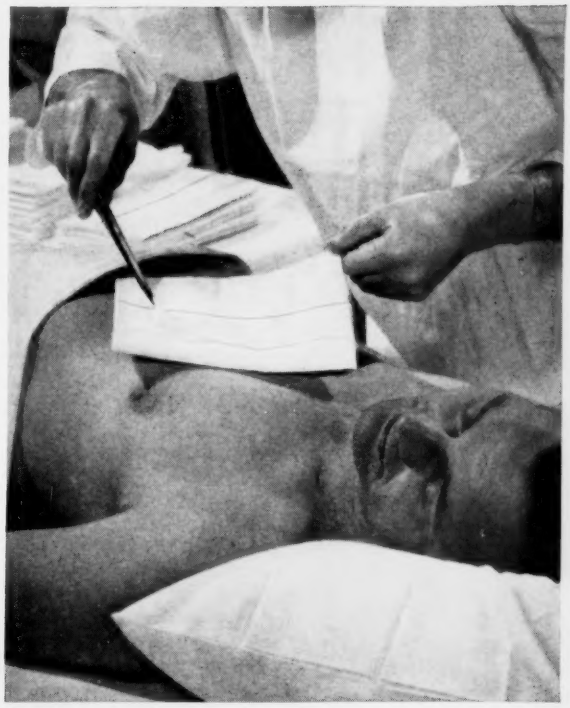

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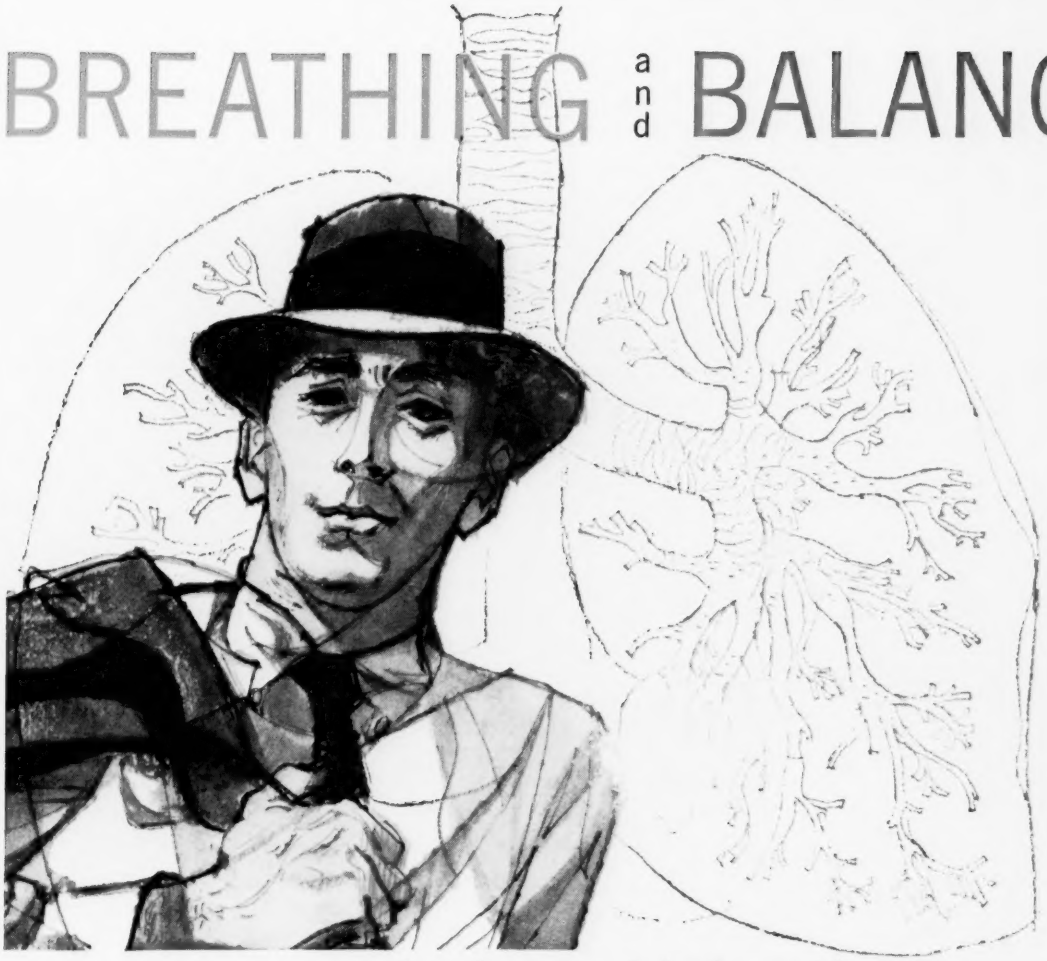

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*Schwartz, E.: New York J. Med. 56:570, 1956.

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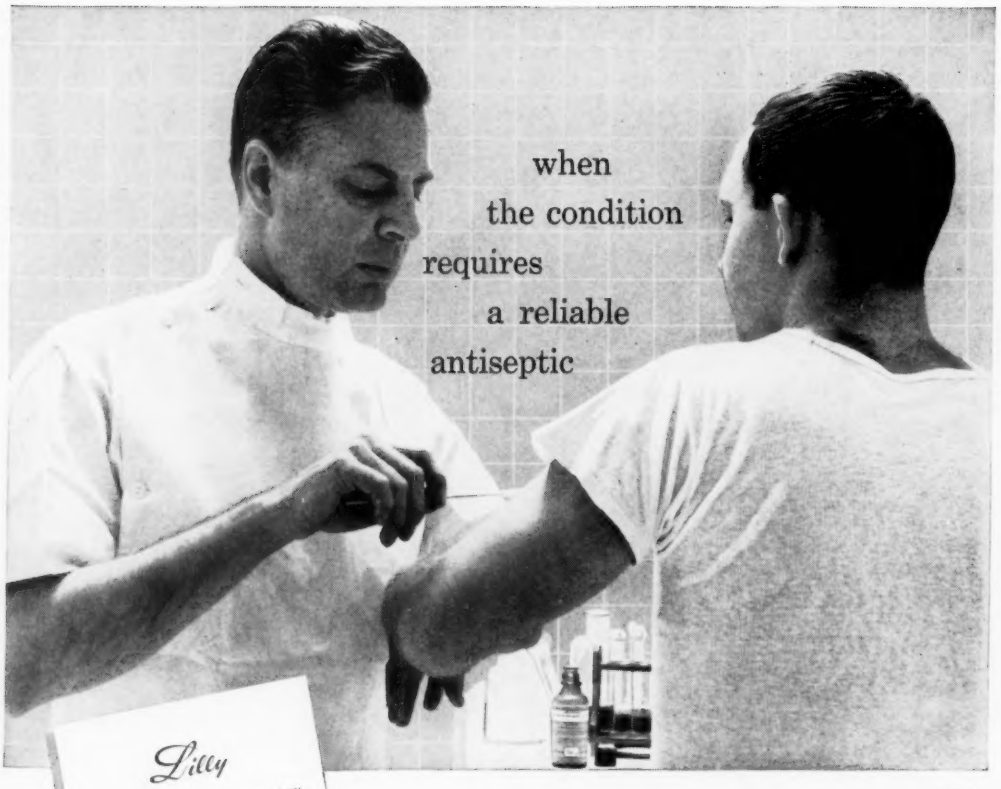

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'Merthiolate' is highly active under virtually all conditions; is relatively nonirritating and nontoxic

'Merthiolate' is germicidal in dilutions up to 1:4,000 in serum media and is relatively nonirritating in the concentrations suggested for use. It also maintains its activity in the presence of soaps. The fact that 'Merthiolate' is used as a bacteriostatic agent in fluids for parenteral administration gives strong evidence of its safety.

The Electromyogram in the Diagnosis of Acute Infectious Polyneuritis

With Particular Reference to the Differential Diagnosis Between This Disease and Industrial Injuries

A. A. MARINACCI, M.D., and CARL W. RAND, M.D., Los Angeles

ACUTE infectious polyneuritis is a disease of the central nervous system affecting most commonly the peripheral nerves of the lower extremities, less frequently the spinal cord, the brain stem, and occasionally the brain itself (encephalomyeloneuronitis). It is also identified as acute infectious neuronitis with or without facial diplegia (Guillain-Barré syndrome).

This disease can occur during industrial occupation. The pain (radiculitis), muscular weakness, and paralysis due to acute polyneuritis often first appear during the working hours. This leads the patient to believe that his symptoms are due to an industrial injury.

Clinically, acute infectious polyneuritis manifests itself in two common forms, the *typical* and the *atypical*. The second group is often mistaken for some other disorder; it simulates such industrial injuries as back sprain, sacroiliac sprain, traumatic myositis, nerve injury, traumatic plexitis, and herniated intervertebral disk.

The writers have examined electromyographically a considerable number of patients affected with acute polyneuritis. Observation in these cases disclosed that the clinical manifestations may not reveal the full extent of the pathological process. This is easily brought to light by use of the electromyograph, which offers a more sensitive method than the clinical manifestations in detecting the true nature of this disease.

From the Department of Electromyography, Hospital of the Good Samaritan, the University of Southern California School of Medicine, and the Los Angeles County General Hospital, Los Angeles; presented at the Fifteenth Annual Meeting of the WESTERN INDUSTRIAL MEDICAL ASSOCIATION, Los Angeles, April 28, 1956.

The Principle of Electromyography

ELECTROMYOGRAPHY (EMG) is the procedure that records and measures the electrical activity generated from the voluntary muscles. The instrument used is the electromyograph which consists of the electrode system, electronic amplifier, cathode-ray oscilloscope, loud speaker, camera, and tape recorder. When the patient is lying down on the examining table the properly insulated needle electrode is inserted into the muscles to be examined.

The activity is picked up and led into the electromyograph for amplification. Then it is converted into sound and visual muscle waves known as the electromyogram which is heard, seen, photographed, and recorded for the unit analysis of normal and abnormal electrical manifestations of the neuromuscular function. It is possible to detect the neuromuscular disorders much in the same sense as the roentgenologist is able to visualize alterations in bony structure with the x-ray and the pathologist cellular pathology with the microscope.

There are three main types of activity. *Normal activity* is recorded from normally innervated muscles including muscular atrophy of disuse. *Denervated activity* is recorded from muscles which have lost their motor nerve supply. *Dystrophic and/or myotonic activity* is recorded from muscles which are themselves the seat of disease.

With the help of the EMG one is able to hear and see heretofore undetectable normal and abnormal neuromuscular electrical function for diagnostic evaluation.

The electromyogram is helpful as an adjunct in

the diagnosis of the following clinical entities: progressive spinal muscular atrophy including the various sub-groups; anterior poliomyelitis; spinal cord tumor; myelitis, either infectious or traumatic; infectious neuronitis with or without Guillain-Barré syndrome with which we are concerned in this article; root compression syndrome (herniated disk); plexitis; polyneuritis; mononeuritis; the evaluation of peripheral nerve injuries as well as the status of regeneration; the group of myopathies including muscular dystrophy. The electromyogram is of great value in suspected cases of hysteria and malingering. Finally, the electromyogram is an aid in treatment in audio-neuromuscular reeducation.

The Electromyograph
Upper left corner—the speaker; upper right corner—oscilliscope and camera; in the open drawer—the tape recorder.

Acute Polyneuritis

THE ETIOLOGY of acute infectious polyneuritis or neuronitis is usually considered to be a virus infection. It most commonly attacks the peripheral nerves and the spinal nerve roots, and is often associated with increased protein in the spinal fluid without corresponding cellular reaction. The sphincters usually escape, but are, in severe cases, sometimes affected. The symptoms are essentially the same as found in radiculitis, muscular weakness, and paralysis. The location of these symptoms varies according to the selectivity of the virus and the susceptibility of certain portions of the peripheral nervous system. For this reason there is a great variation in the clinical manifestations of infectious polyneuritis. It may attack only the intrinsic muscles of the feet or every muscle from head to foot. Then again it may attack a group of muscles of either one upper or one lower extremity or only the muscles of the trunk. This variation accounts for the problem in differentiating this disease from conditions found in industrial nerve injuries.

Although these two conditions may simulate each other clinically, electromyographically speaking there is a distinct variation in their nature. Acute infectious neuronitis produces rather widespread changes whereas industrial injuries result in isolated nerve lesions. The electromyogram helps the clinician to distinguish between an apparently focal lesion (which in reality is a diffuse lesion due to polyneuritis) and a true isolated lesion.

The *typical* group of the clinical manifestations of acute polyneuritis consists of three main types:

1. The mild type, affecting both feet and occasionally both hands with or without temporary facial diplegia;

2. The acute type, beginning with paralysis in the legs and extending to the arms, or involving all the limbs simultaneously—in which bilateral facial paralysis is common, and the trunk intercostals and the diaphragm may also be affected and occasionally the cranial nerves and the medulla, as well as the brain (encephalomyeloneuronitis); and

3. The ascending type (Landry's paralysis), which is probably the most common, beginning with paralysis in the legs and ascending gradually to the trunk and arms.

Typical Syndromes

THE TYPICAL syndrome manifests itself as an acute infection with generalized malaise with or without a slight rise in temperature. Some cases first present a paralysis of one or both sides of the face followed by polyneuritis. The involvement may be motor or it may be both motor and sensory. In polyneuritis the distal portion of the limbs becomes affected. However, occasionally the proximal portion of the limbs such as the thighs may become affected before the feet and legs. The sphincters usually escape, although in severe cases they also may be affected. The most outstanding findings in the spinal fluid are increased protein with a normal cell count.

Atypical Groups

THE ATYPICAL group of infectious neuronitis usually manifests itself in local or restricted involvements. These are misleading to the extent

that they not infrequently simulate syndromes due to industrial injuries, particularly lesions such as are presented in central or unilateral herniated intervertebral disk. Naturally some of the patients have been submitted to study with contrast media, and some have even undergone laminectomy.

The problem is presented when radiculitis, muscular weakness, and paralysis are present in an isolated region or group of muscles. This manifestation is common in three specific areas: (1) the axial muscles of the trunk, specifically the muscles of the thoracic and/or lumbar regions; (2) unilateral involvement of either an upper or lower extremity; or (3) paralysis and weakness restricted to both lower extremities.

The Electromyogram in Acute Polyneuritis

THE electromyogram reveals that acute infectious polyneuritis is a widespread infectious disease producing rather diffuse changes (denervation). By its use one is able to detect different degrees of denervation from the very mild to the very severe. Therefore, it is possible to differentiate between widespread infection and such isolated nerve lesions as are produced by nerve injury and herniated disks.

In the usual form of acute polyneuritis denervation is most abundant in the muscles peripherally innervated and the least proximally. In the mild cases, denervation may be detected only in the intrinsic muscles of the feet and hands. In other cases it may be detected peripherally as well as to a minimal degree in the shoulder and pelvic girdles. In more severe cases the axial muscles of the trunk show the same degree of denervation as those of the extremities. In the extreme cases (encephalomyeloneuronitis) the denervation is recorded in all the voluntary muscles from head to foot.

In the atypical forms such as the involvement of the muscles of the trunk, the denervation in greater degree has been found in the lumbar and/or thoracic regions, and in a lesser degree extends into the apparently normal upper and lower extremities. This type simulates the central herniated intervertebral disk. However, in central herniated intervertebral disk the denervation is confined in the distribution of the compressed nerve root or roots. No electromyographic changes are found above or below the level of the lesion. Likewise, the non-affected extremities are normal.

In the unilateral type of neuronitis such as the involvement of either one lower or one upper extremity, or unilateral involvement of the intercostals, the denervation is most abundant in the clinically affected areas and in lesser amount is detected in the apparently normal extremity. This type also simulates unilateral herniated intervertebral disk. The unilateral herniated intervertebral disk produces isolated electromyographic changes (denervation) only in the muscles of the involved nerve root (myotome). No denervated activity is found in the non-affected extremities and axial muscles of the trunk with the exception of those axial muscles which are part of the involved myotome.

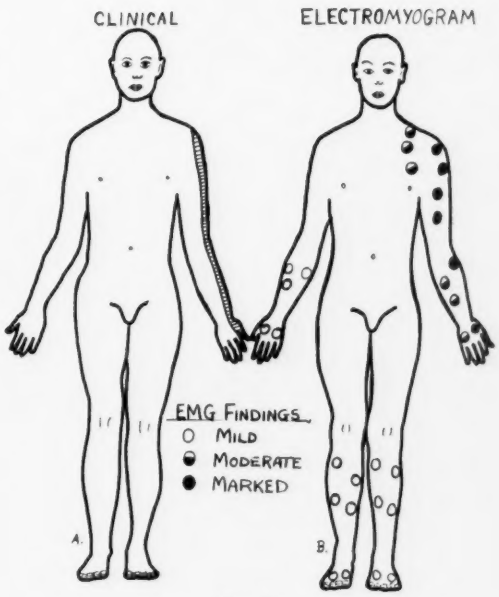

Fig. 1.
Case 1. The clinical findings (31 year old laborer) suggested left cervical herniated intervertebral disk (A). The electromyogram revealed diffuse changes not consistent with a cervical root compression syndrome (B).

In the type of polyneuritis restricted to both lower extremities the denervation is recorded not only from the clinically affected muscles but in lesser degree it is found in the pelvic and shoulder girdles and the axial muscles of the trunk as well as in the apparently normal periphery of the upper extremities. The syndrome in these cases simulates that encountered in central herniated lumbar intervertebral disk. In such cases the denervation is found only below the level of the lesion, and no denervation is found above the level of the lesion or in the uninvolved extremities.

Thus the differential diagnosis rests upon the distribution of the electromyographic denervation. Industrial nerve injuries as well as nerve root compression produce isolated electromyographic changes, while infectious polyneuritis, to the contrary, produces rather widespread changes. The clinical application of the electromyogram has been covered by one of the authors.[5,6,7,8,9]

Thus, a careful evaluation of the distribution of the electromyographic changes leads to the correct localization of the lesion. When such find-

ings are taken into consideration with the clinical picture, the electromyogram plays a definite role in making a precise clinical diagnosis.

Isolated cases have been encountered where widespread infiltrating spinal cord tumor can give electromyographic changes similar to those found in neuronitis. Furthermore, neuronitis can occur coincidentally with cord tumor. Therefore, in these cases, opaque myelography should be performed to rule out any obstruction in the subarachnoid space which may indicate cord tumor, even though the electromyographic changes may suggest neuronitis.

Representative Cases

DURING the course of employment acute polyneuritis can first manifest itself with pain radiating into either the right or left upper extremity. This manifestation can be misinterpreted as cervical herniated intervertebral disk.

CASE 1. A 31 year old male, while lifting a garbage can, complained of radiating shooting pain down the left arm followed by muscular weakness and paresis. The neurological manifestations strongly suggested a herniated fifth or sixth cervical disk. (Fig. 1, A). The spinal fluid revealed only elevated protein, and the opaque myelogram was normal. The electromyogram showed widespread changes (Fig. 1, B) in the periphery of the upper and lower extremities, with severe changes of the left brachial plexus (plexitis). The patient made an uneventful recovery.

Comment: The electromyogram in this case was able to solve the complicated clinical picture and establish the correct diagnosis as well as the prognosis, for in cases of infectious polyneuritis such as this there is usually uneventful recovery while nerve root compression may linger on. Furthermore, the electromyogram may have eliminated unnecessary laminectomy for this patient. In short, this case demonstrates that a sudden onset of acute polyneuritis can simulate a cervical herniated disk.

Sudden acute radiating intercostal pain can also present a problem in differential diagnosis. When such acute pain appears during working hours, especially coincidental with lifting an object, the patient naturally believes that he has sustained an industrial injury.

CASE 2. While lifting a typewriter a 44 year old woman suddenly noticed a shooting radiating pain in the right upper quadrant. The patient claimed to have hurt herself while lifting the typewriter. The industrial surgeon thought she had sprained her back, while the general surgeon suspected an acute gallbladder attack. (Fig. 2, A). The neurological examination showed nothing remarkable, and the patient's complaints suggested her symptoms were psychological in nature. Twenty-one days following the onset of the episode, the electromyogram revealed definite changes. However, they were not consistent with an isolated lesion. (Fig. 2, B). The denervation was found bilaterally in the axial muscles from approximately the second thoracic vertebra extending as far down as the first lumbar vertebra, and in lesser degree was detected in the periphery of both upper and lower extremities. The spinal fluid examination revealed definite elevated protein (125 mg.) with no corresponding increase in cell count.

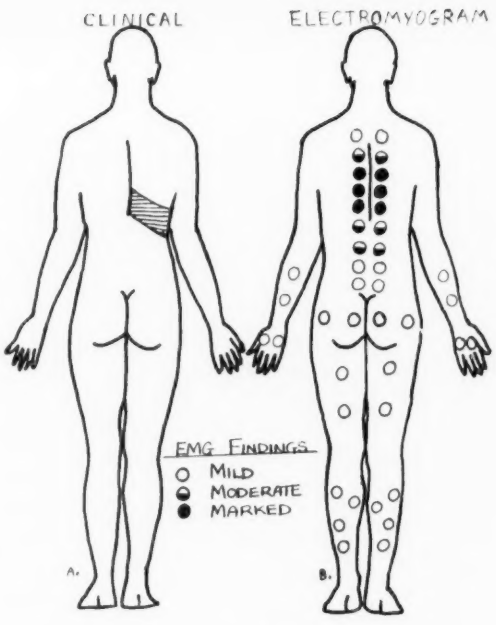

Fig. 2.
Case 2. A 44 year old stenographer while lifting a typewriter noticed shooting pain in the right mid-dorsal region pointing to dorsal herniation of an intervertebral disk (A). The electromyogram showed diffuse changes which ruled out the suspected diagnosis of root compression (B).

Comment: Here the clinical manifestations of a neuronitis were restricted and thus simulated industrial injury in the thoracic region as well as possible intra-abdominal pathology (cholecystitis). The patient gradually improved and after eight months showed more or less full recovery. Here again with the help of the electromyogram it was possible to differentiate between widespread changes such as those produced by neuronitis and focal changes produced by industrial injury. On the other hand, if the alleged injury had been the result of mid-thoracic herniated disk, the denervated activity would have been confined in one of the intercostal nerves alone and not as widespread as was found in this case.

Back trouble in the form of muscular weakness and paralysis due to neuronitis may first be noted by the patient during the course of his occupation. As one will expect, the patient frequently complains that he has sustained a back injury while engaged in his employment. These cases present a diagnostic problem, as the following will indicate.

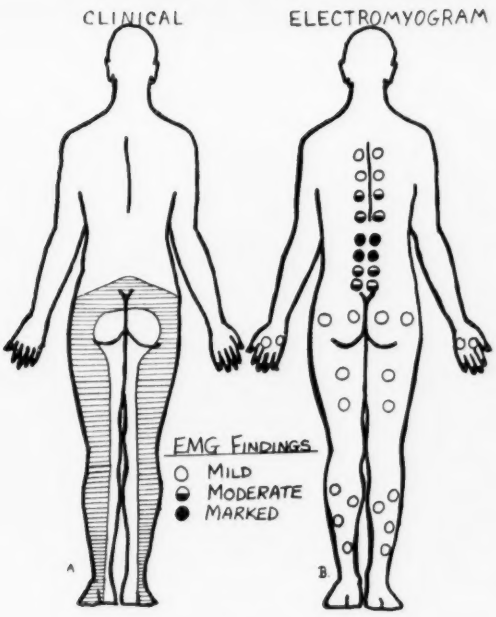

Fig. 3.
Case 3. The clinical examination of a 34 year old male indicated centrally herniated lumbar intervertebral disk (A). The electromyogram showed diffuse changes which ruled out an isolated neurosurgical nerve root compression (B).

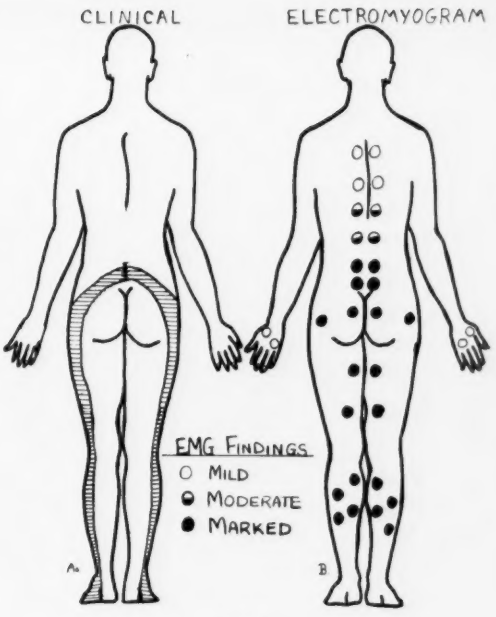

Fig. 4.
Case 4. A 62 year old male presented clinically a fifth lumbar nerve root compression syndrome followed by laminectomy (A). Three days later paralysis of the lower extremities was noted. The EMG revealed diffuse changes (B).

CASE 3. While unloading crates of celery a 34 year old Negro truck driver suddenly became aware of pain in the low back. He stopped unloading the crates and while driving his truck back to the depot noted difficulty in applying the brakes because of severe radiating pain. His condition did not improve, and he was sent home from work. Roentgenograms taken the following day were normal. He remained in bed at home without improvement. Finally he was admitted to the hospital with a suspected diagnosis of central herniation of a lumbar intervertebral disk (Fig. 3, A). Before contemplating opaque myelography an electromyogram was ordered. The muscles of both upper and lower extremities as well as the muscles of the trunk from the second cervical to the third sacral vertebra were sampled bilaterally. Denervation was found most prominently in the axial muscles from the eighth thoracic to the fifth lumbar vertebra bilaterally and in minimal degree in the periphery of the upper and lower extremities (Fig. 3, B). These findings were consistent with widespread involvement affecting the axial muscles (low thoracic and lumbar region) most severely. To a minimal degree the muscles of the extremities were also altered. The neurological examination revealed generalized weakness but no loss of spincter control. A lumbar puncture revealed an albumino-cytologic dissociation (Guillain-Barré) syndrome. After eight months, the patient showed definite improvement.

Comment: The electromyogram in this case was able to differentiate a root compression entity due to injury such as occurs in intrinsic disk pathology from widespread acute infectious polyneuritis which in this case affected the trunk muscles in severe degree. This weakness simulated central herniated lumbar disk. In addition some of the examiners suspected hysteria and malingering in this case. These were ruled out by the electromyogram.

Acute infectious polyneuritis often affects both lower extremities alone. This weakness and paralysis may be preceded by acute radiating pain. The pain further fortifies the possibility of a central herniated intervertebral disk. To complicate this picture the pantopaque column on the myelogram may show a suggestive defect which further substantiates the suspicion of a herniated intervertebral disk. However, the picture can very well represent the inception of acute polyneuritis. Some of these patients have undergone laminectomy. Naturally the persisting paralysis is attributed to surgery.

CASE 4. A 62 year old male, while working as a laborer, noticed a shooting pain radiating down both legs, strongly suggesting a bilateral fifth lumbar root compression syndrome (Fig. 4, A). A myelogram disclosed a suggestive defect in the pantopaque column consistent with central herniation of the fourth lumbar disk. Laminectomy was performed but no definite pathology was found. Following the surgery the patient continued to have pain and on the third day developed considerable paralysis in both lower extremities. Sphincters remained intact. The

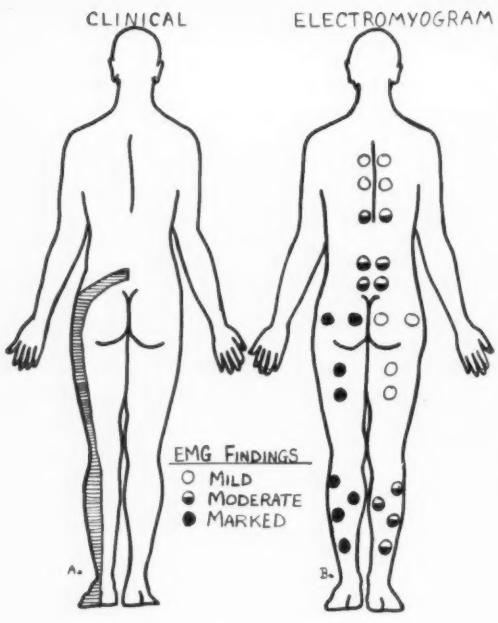

Fig. 5.
Case 5. A 40 year old furniture mover presented a typical left first sacral nerve root compression syndrome suggesting herniation of the fifth lumbar intervertebral disk (A). The electromyogram showed rather widespread changes which were not consistent with a root compression syndrome (B).

electromyogram 21 days after the onset revealed diffuse changes involving both lower extremities, the pelvic girdle, and in a lesser degree as far up as the eighth thoracic level and the distal portion of both upper extremities (Fig. 4, B). This electromyogram was not consistent with the clinical findings which demonstrated the lesion at the fourth lumbar level.

Comment: The electromyogram in this case was essential for the accurate diagnosis as well as to give the proper explanation for the ensuing paralysis following surgery. The widespread electromyographic changes established the fact that the paralysis was due to diffuse affection and not to industrial injury or surgical intervention. If the paralysis had been the result of the accident or the surgery, the electromyographic changes would have been confined below the level of the lesion (in this case the fourth lumbar vertebra), and no change would have been found above that level, and the upper extremities would have been normal.

Sudden radiating pain and weakness in one extremity due to acute infectious disease manifests itself as a unilateral diskogenic lesion. Again these cases can be misinterpreted as an industrial disease entity.

CASE 5. A 40 year old male suddenly noticed acute pain followed by weakness in the left lower extremity during his regular occupation as a furniture mover. The usual treatment for back sprain and suspected ruptured lumbar intervertebral disk (Fig. 5, A) was administered without definite improvement. Seven weeks after the injury he was admitted to the hospital for further diagnostic procedures. The neurological examination revealed no definite objective findings with the exception of some altered sensation, depressed reflexes, and weakness in the left lower extremity. The electromyogram revealed diffuse changes involving both lower extremities and in lesser degree the pelvic and axial muscles (Fig. 5, B). The electromyographic findings were not consistent with a herniated disk. They led to a spinal fluid examination which revealed elevated protein (95 mg. percent) with no corresponding increase in the number of cells. Thus, the diagnosis of acute polyneuritis was established.

Comment: Again in this case the electromyogram was of great help in arriving at the correct diagnosis. This case demonstrates how acute infectious neuronitis can give symptoms similar to the most common unilateral herniated intervertebral disk. Clinically, a left fifth lumbar disk was suspected. In such instances the electromyogram would have revealed denervation only in the distribution of the first sacral myotome. Thus this patient was spared opaque myelography and possibly laminectomy. The patient showed improvement, with full recovery 18 months after the onset of symptoms.

Summary

ACUTE radiating pain, muscular weakness and paralysis due to the atypical form of acute polyneuritis often first appear during the working hours. This leads the patient to believe that he has sustained an industrial injury simulating back sprain and ruptured intervertebral disk. Naturally some of these patients are therefore submitted to other diagnostic procedures and occasionally even to laminectomy. The electromyogram offers a more effective method than the clinical neurological signs in detecting the essential nature of acute infectious polyneuritis. Cases have been presented to demonstrate this discrepancy between the clinical manifestation of this disease and the electromyographic findings. The electromyogram has been found to be useful in differentiating between industrial isolated lesions and atypical lesions due to infectious neuronitis which simulate industrial injuries. Although clinically, these two conditions may simulate each other, electromyographically there is a variation in their nature. Acute infectious polyneuritis produces rather widespread changes, whereas industrial injuries result in isolated nerve lesions. The electromyogram helps the clinician to distinguish between the apparently focal lesion (which in reality is a diffuse lesion as a result of polyneuritis) and the direct isolated industrial nerve lesion. Nevertheless, the electromyogram is a laboratory procedure and its find-

ings must be viewed in the light of the clinical picture. It should be stressed that the electromyogram must be interpreted by a physician who is an expert in this field and well acquainted with the peripheral nervous system. Furthermore, the electromyogram should never replace a complete neurological examination and other appropriate laboratory and special procedures.

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Disability Evaluation

BOOKS have been written and the literature is full of articles about disability evaluation, but it still is a difficult and controversial subject. In most states there is no difference in the disability ratings due to different occupations. An unskilled laborer rates the same disability for his fingers as an accomplished pianist, musician, or highly skilled technical worker. Each examining physician should report his diagnosis, findings, and opinions as he honestly determines them by examination. It is not within his province to speculate or to misinterpret normal variations and findings as being abnormal or indicating disease or injury. An example of this would be the misreading of normal x-ray skull sutures or epiphyseal lines as fractures. It is unethical purposely to give high disability ratings in order to facilitate a compromise figure. The evaluation of disability or the evaluation of the physical and mental status of an injured employee is an art comparable to that of the clinician in medical practice. He gains proficiency by meticulous observation, examination, experience, seasoned judgment, and the writing of a concise, factual, understandable and honest medical report of his examination.

—From "The Essentials of Medical Reports for Employee's Care," by EDWARD C. HOLMBLAD, M.D., in *Illinois Med. J.*, July, 1956.

The Solubility in Water of Two Cadmium Dusts with Regard to the Risk of Chronic Poisoning

AXEL AHLMARK, M.D., LARS FRIBERG, M.D., and HARRIET HARDY, M.D.

On many occasions this Journal receives manuscript material not complete but well provocative. The item below well fits into that category, and our estimate of the situation leads us to be intrigued by the idea rather than by the facts thus far available. It is expectable from the quality of the idea, that supporting facts in due course will come to hand.—EDITOR.

IN RECENT years a number of reports has been published of symptoms in workers with a long exposure to cadmium dust. The findings, however, have been to some extent contradictory.

American experience, based on examinations of workers in a cadmium smelter (Princi, 1947[1]) and engaged in the manufacture of cadmium-faced bearings (Hardy and Skinner, 1947[2]), by and large has not provided evidence for the occurrence of chronic cadmium poisoning. Hardy and Skinner, however, found certain mild symptoms in the workers they examined which they considered could possibly be related to the exposure to cadmium.

Swedish, British, French and German studies[3,4] of workers in the alkaline accumulator industry, and British investigations[5,6] of workers casting copper-cadmium alloys demonstrated clearly, on the other hand, the occurrence of a characteristic syndrome evoked by prolonged exposure to cadmium dust. Briefly described, the main signs of this condition are proteinuria (molecular weight of the protein about 20,000-30,000), elevation of the erythrocyte sedimentation rate, renal damage and pulmonary emphysema. These changes have in certain cases resulted in disability and even in death. From present experience it would seem that no appreciable regression is to be anticipated when the toxic symptoms have been severe. Progression has been seen to occur in affected workers after removal from the exposed occupation.[7]

The reason for the difference in the findings of the American and European investigators has not been elucidated. In the American workers, it is true, the exposure was of somewhat shorter duration and the atmospheric cadmium concentration probably lower.[1,2]* However, as it is not known how the dust content varied during the period of exposure, decisive importance cannot be attached to the above-mentioned differences.

Since we considered it possible that the disparate clinical findings might be attributable to certain physicochemical properties of the dusts, we made a single set of comparative studies of dust from the American cadmium smelter (Princi's study) and from the Swedish accumulator industry (Friberg's study).

Our Investigations

THE solubility of the dusts as a reflection of physicochemical differences which we considered to be of fundamental importance for injurious systemic effects, was the main aspect studied. Certain measurements of the size of the dust particles were also made. No detailed analysis of particle size was carried out, as comparative investigations of dust in atmospheric suspension were not feasible.

As a measure of physicochemical difference, estimation of solubility was performed by shaking watery suspensions of the dusts in various manners and, after filtration, analyzing the amount of cadmium in the filtrate.

Methods

WEIGHED quantities of dried dust were dissolved in 8 cc of distilled, freshly boiled water in test tubes with ground glass stoppers. "Shaking" was accomplished mechanically by allowing the tube to rotate slowly at right angles to its long axis.

The suspension was filtered under positive pressure in a Thiessen apparatus with pore dimen-

*Dust concentrations have not been reported from the German and British accumulator industries. In the above-mentioned British investigation[6] of workers casting copper-cadmium alloys, King (1955[8]) found only small amounts of cadmium in the air. The findings are however not directly comparable with other studies as the exposure was to freshly formed cadmium oxide fumes with particles less than one micron in diameter.

sions 0.05-0.01 u (type ultracella fein, Sartorius-Werke, Gottingen).

The total cadmium content was determined by a polarographic procedure.[9]

Estimation* of the size of the particles was made by fractionation in a dust centrifuge,[10] which is based on a principle evolved by Wolf and Rumpf (1941[11]).

Polarographic determination of cadmium content after solution in HCl and HNO_3 showed the American dust (dust A) to contain 86.3 ± 2.0% Cd and the Swedish (dust B) 62.3 ± 1.0. (Six analyses were made on each dust type.)

EXPERIMENT I: Nine samples of the dusts, each weighing 200 mg, were added to 8 cc of water. The test tubes were shaken for periods ranging from one half to 960 hours. The contents were then filtered and the amount of cadmium in the filtrate estimated by polarography.

Dust B was considerably more soluble in regard to cadmium than dust A (Table I). It was also observed that after half an hour no more cadmium was dissolved from the first mentioned samples, whereas the American dust did not dissolve maximally until after one or two days in aqueous suspension.

The solubility of dust B was also studied with samples ranging from 100 to 1,600 mg in weight. The results (Table II) showed that the amount of cadmium in solution increased with the amount of added dust. That no more cadmium was absorbed after half an hour in the first experiment, therefore, was not ascribable to saturation of the water with cadmium.

*The measurements were made by K. A. Gustavsson, Enkoping.

TABLE I.
SOLUBILITY (20°C) IN RELATION TO "SHAKING" TIME

Shaking time (hours)	γ Cd per 8 cc	
	Dust A	Dust B
½	23	168
3	23	176
6	24	248
24	38	160
48	74	150
71	85	179
168	59	170
835	93	213
960	51	180

TABLE II.
SOLUBILITY (20°C) IN RELATION TO AMOUNT OF ADDED DUST (DUST B)

Weight of dust, g	γ Cd/8 cc
0,100	83
0,200	250
0,400	472
0,800	738
1,600	1018

TABLE III.
SOLUBILITY (20°C) AFTER 24 HOURS' SHAKING

Dust type	γ Cd per 8 cc	
	1st shaking	2nd shaking
Dust A	49,0 ± 1,9	39,6 ± 8,2
(nr. of values)	(3)	(5)
Dust B	136,6 ± 3,9	66,3 ± 4,3
(nr. of values)	(5)	(3)

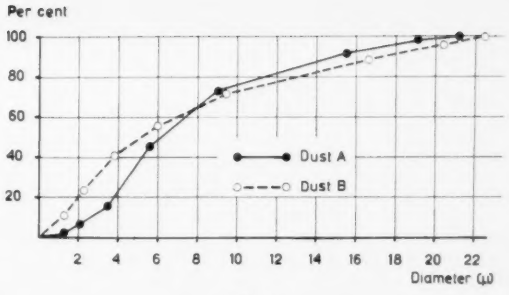

Fig. 1.
Curves showing the dust fractions with particles smaller than the values of the abscissa.

EXPERIMENT II: A number of test tubes, each containing 200 mg of one of the dusts, was shaken for 24 hours, filtered, and the cadmium content analyzed. The dust remaining on the filter paper was thereafter dried and amounts of 200 mg subjected to the same procedure as before.

The solubility of dust B diminished after the first shaking by about 50%, while that of the other dust was not significantly reduced (Table III). The remaining findings showed roughly the same difference in solubility as in Experiment I. That complete conformity was not obtained possibly may be attributable to the circumstance that, when Experiment II was performed, the dusts had been stored for more than two years after Experiment I.

EXPERIMENT III: Dust B contained, in addition to cadmium, about 20% of iron determined as metallic Fe.[3] Dust A contained no noteworthy contaminants. For this reason we investigated the possible effect of iron on the solubility of cadmium.

Samples of dust A were mixed with iron dust, shaken for 24 hours, and then filtered. Estimation of the cadmium in the filtrate yielded the same values as in the experiments performed without admixture of iron.

EXPERIMENT IV: As a complement to the solubility experiments certain determinations were made of the size of the dust particles. It was found that small particles were more frequent in dust B than in dust A (Fig. 1).

Comment and Conclusions

THESE studies showed undoubted differences between the Swedish and American dust samples. Thus significantly more cadmium was dissolved in water from the former dust. This is the more remarkable when it is considered that the American samples contained substantially more cadmium than the Swedish. The difference in "solubili-

ty" of cadmium in water is probably associated with the considerably greater number of small particles and or the existence of a small amount of a soluble compound in the latter dust.

Can such differences as those hereby demonstrated explain at least in part the disparate clinical findings in the two countries? It is true that the injurious action is intimately bound up with the intensity and length of exposure. As stated in the foregoing, the limits within which the dust concentration varied over the years are not known. This is one of the reasons it cannot be determined whether greater solubility in body fluids as well as water of the Swedish dust has been responsible for the development of toxic symptoms. The difference in the degree of solubility in water, however, was so great that under any circumstances it must be attributed considerable significance.

The admixture of iron in the Swedish dust, as far as can be judged from Experiment III, played no part in the greater solubility of this dust. Nor has iron any significance for the occurrence of chronic cadmium poisoning. This has been demonstrated in animal experiments,[3] and in extensive clinical studies.[5,6]

Further examination of the physicochemical properties of the investigated dusts, by study of optical properties and of solubility behavior in biological systems, for example, may shed more light on the differences in the clinical findings. Because of the uncertain quantitative data for the exposure of workers in both countries, however, we have not undertaken more detailed studies at this time. The elucidation of this problem is nevertheless of great interest, *inter alia* for the stipulation of so-called threshold limits. It may be hoped that more accurate exposure data will accumulate and further laboratory investigation will then seem worth-while.

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What Cancer Means to Industry

Q. WHAT ABOUT *losses of key executives?*
A. In answering this, may I say that my first incentive to join in American Cancer Society work came with the death, a number of years ago, of one of our own key men. He was a distinguished scientist and former university professor who headed the Detroit Edison Research Department. This man was as nearly indispensable and irreplaceable as anyone could be. He was stricken at the height of his productivity. And now, within a relatively few intervening years, other key Edison men have been lost, for example: The company's vice-president in charge of sales. The controller for the company. An eminent member of our legal counseling firm. The vice-president in charge of personnel. Our senior vice-president, a man exceptionally distinguished in service to the Detroit community. The value to an industry of men like these can hardly be assessed. All would have had years of service before them.

Q. *Could you give an estimate on the number of leaders lost annually through cancer in such a company as Detroit Edison?*

A. Yes, by reference to figures furnished by Dr. Lyndle Martin, Director of Edison's Medical Department. The company has about 1,200 employees who are classified as supervisors. Dr. Martin says we can expect six or seven cases of cancer among this group each year. Throughout the company, the rate of occurrence is between 60 and 70 cases a year.

Q. *What does this mean to the company, economically?*

A. The answer to this depends, of course, on the percentage of people actually disabled or lost out of the total number afflicted. Dr. Martin estimates that about half the cases discovered in a year result in total and permanent disability. This is hard to evaluate—but probably would add up to $100,000 or more in time loss and compensation.

Q. *What has been and is being done on the cancer problem in your company?*

A. A great deal, I am happy to say. The Detroit Edison Medical Department is one of the oldest and at the same time most modern industrial medical establishments in Southeastern Michigan. The staff has always emphasized "cancer-alertness" as much as possible. The percentage of cases detected reasonably early has been high, I believe, with a resultant good proportion of cures, especially in skin, mouth, and stomach types of malignancy. Dr. Martin estimates that about 30% of cases detected are cured through early and adequate treatment.

From "What Cancer Means to Industry—And Vice Versa" by David M. Reed and Arthur S. Albright, Detroit, Michigan; published in the *Journal of the Michigan State Medical Society*, April, 1956: an interview with Mr. Albright, Detroit Edison Executive Vice-President, retired, and an active worker in the program of the American Cancer Society for many years. Mr. Reed is Editor of *Press Information Services*, Detroit Edison Company.

Part-Time Physicians and Social Security

CHARLES F. SHOOK, M.D., Medical Director
Owens-Illinois Glass Company, Toledo

THERE has been developing a marked interest in the subject of social security for the part-time physician or contract-type industrial physician. Much has been printed in professional journals both for and against the compulsory form of legislation but very little on a voluntary approach. Surveys have been taken by national and local societies, and still there has been no real meeting of the minds.

Recently a part-time physician requested that he be classified as an employee and that he be included in the company's social security program. His intentions were well founded, but the idea was entirely new to the company, as the part-time doctor in the plant had not been considered as an employee in the full sense of the word. He was a contract physician on their books. It is true that he was supposed to be in the dispensary at a specified time daily, but there was a certain leeway not permitted the hourly or salaried employees. Even though not an employee, he was granted group insurance and service awards but not retirement or paid vacations, except holidays.

So as to have all angles studied, the matter was considered by the legal and tax departments of the company. The Medical Director of the company was asked to secure information from Medical Directors of similar companies about their handling of this problem, and also to ask the American Medical Association as to their thinking, since they had expressed opinions in the past upon compulsory coverage of all physicians. He was also asked to survey the desires of the plant physicians themselves.

The following is the reply from the law department of the American Medical Association: "The Social Security Act provides that if a person works in employment he is subject to the Act. The key words are 'in employment.' Whether this doctor you refer to is 'in employment' depends upon all the facts concerning the relationship between the company and the doctor. Thus, this determination is not something which the American Medical Association can make."

THE following are from replies from Medical Directors:

1. "I have discussed this subject with a good many Medical Directors and several industries, and the question of social security liability hinges upon whether the doctor on a retainer fee or monthly or yearly salary is a *bona fide* employee. If he is a *bona fide* employee, he would be entitled to all the other benefits and privileges that a company gives its regular employees. I feel that a doctor who is on a fee-for-service basis is not a *bona fide* employee and would not come under social security."

2. "We have always considered the physicians as employees and have, therefore, deducted F.I.C.A. Our physicians have preferred it this way, and we have made it a uniform policy. One inquiry did arise about two years ago. At this time, I inquired of the Bureau of Legal Medicine of the A.M.A. and summarize our conversation as follows: 'Apparently, the crux of the situation hinges upon the fact that even though there is quasi-contractual relationship with the industry involved, the major portion of the physician's income is from private sources; further, the physician may leave the premises of his employer at his discretion for private reasons. The lawyer's opinion was that the Federal Courts had no intention of appealing the Willard Storage Battery case. His final conclusion was that under a decision of the court, a part-time physician is not liable under the F.I.C.A. Further, he is not liable to income deductions from the employer. This is the government side of the picture. However, should industry choose to consider the part-time physician an employee and make F.I.C.A. and income tax deductions, this would be a policy of the individual industry and the government would receive such contributions.'"

3. "We have quite a number of part-time physicians on our payroll, which automatically makes them eligible for all employee benefits, including social security as well as health benefits, life insurance, pension, and the privilege of buying company products at the employee discount rate. I might add that it is the opinion of many of our people, particularly in one big division where the part-time doctor employee started, that the payroll doctor is tied in much closer to management and becomes a better member of the employee relations team. It is only fair to state that a number of other people do not sincerely hold this view and would like to restrict the privilege of employee status to doctors who devote at least half-time to company medical work. I have

pointed out that this type of restriction is somewhat discriminatory in reference to our smaller plants. I, personally, am inclined to believe that about two hours per day should possibly be the point of preference."

4. "We carry all the doctors who work for us under social security and list them all, as far as the government is concerned, as full-time employees. Actually, they are all part-time doctors. I have one who works three hours, five mornings a week, and two others who alternate working three hours, two mornings one week and three mornings the next. They are carried as full-time doctors and the company pays the social security according to what they draw. In this way, we are able to give them more benefits. These benefits we hand out to physicians are an incentive to work for us industrial-wise. As you know, the monetary part is very slim compared with what they can do in private practice."

5. "We consider all of our part-time physicians to be employees of the company and, hence, eligible to the usual benefits which accrue to employees. Insomuch as we do consider them in this status, they are eligible for social security and deductions are made correspondingly."

6. "It is our feeling that part-time physicians are not considered employees. We have not even gone as far as you have in offering them group insurance and service awards. We do not anticipate making any change in this present arrangement."

7. "Within the past two years, we have extended practically all of our company benefits to our part-time physicians. We do set up a limited period of 'probation,' usually for a matter of six months or so, to determine if the physician is going to satisfy the requirements of the position and whether he is likely to stay for a time. We have covered our part-time people under social security for many years, but the additional benefits have been extended only within the past two. This includes group insurance, sickness allowance, vacation, wage dividend, and attendance at medical meetings."

THE interested company's survey revealed that exactly 50% of the plant physicians wanted to be covered by social security and only 10% were positively against the program. The rest of the queried doctors were non-committal but willing to go along with the majority.

With all of these data before them, the company's tax department presented the question, along with a copy of the company's plant doctor contract, to the government for a ruling. Here is the reply:

"This refers to your letter dated August 20, 1956, requesting information as to whether a plant doctor should be considered an employee under the Federal Insurance Contributions Act and under the Federal Unemployment Tax Act.

"It has been held that a physician engaged in the private practice of medicine who in connection therewith examines and treats company employees as a part-time service for the company, is not an employee of the company within the meaning of the Federal Insurance Contributions Act and the Federal Unemployment Tax Act.

"A review of the contract submitted by you with the above letter does not appear to give you (the company) direct control and supervision over the details and means by which the doctors perform their services, although there is a mutual right to terminate the services; each party is given the benefit of the notice. The above facts seem to indicate that the doctor is an independent contractor. The doctors are not 'as a matter of economic reality' dependent upon the company.

"In view of the information contained in the contract the doctors would not be considered employees of the company."

Over and Over

THERE probably never was a good paper which was not worked over several or many times. The writer will do well to search through his pages for every sentence and word that can be deleted without taking from the essential message. Every sentence that is vague should be rewritten until it can have but one meaning and that an obvious one. Finally, the writer who would have his papers widely read will do well to use, when possible, the short Anglo-Saxon word rather than the long one of Latin or Greek derivation. This makes for easier reading; and the tired doctor, when he comes home at night from what he hopes is his last call, much appreciates easy reading, with simple English words and short and simply-constructed sentences.

—From "The Need for Shortening Scientific Papers," by WALTER C. ALVAREZ, M.D., Division of Medicine, Mayo Clinic, quoted in *Delaware State Medical Journal*, September, 1956.

The Art of Human Relations in Industrial Medicine

AARON SAMUEL LEVEN, M.D., Dr. P.H., Los Angeles

LIKE "Love and Marriage" in the popular song, the science of industrial medicine and the art of human relations in industrial medical practice are inseparable: you can't have one without the other.

The problems of the various forces involved in human relations in general, especially as these pertain to industrial medicine, are endless. The physician engaged in industrial medical practice truly deals with humanity. In addition to treating patients for injuries or illness arising out of, or in the course of work, he also comes into daily contact with management, with insurance carriers, with industrial engineers and hygienists, and, not infrequently, with the judiciary. Is it any wonder that it is perplexing to him to know the right way of dealing with so many problems involving so many people?

Some industrial physicians are inclined toward the impersonal approach: the patient is a "case," not a person; management is the employer, not a person or group of persons; insurance carriers are collectors of medical data concerning their risks; industrial engineers and hygienists are sources of help or annoyance; and the judiciary is an agency that deprives him of valuable time away from his practice.

But is such an attitude purely impersonal?

The fact is, there is no such thing as an "impersonal approach" for the successful industrial physician, since personal feelings do exist and do influence the behavior of people. The best thing to do with personalities is to recognize their existence, and deal with them. This may be a new concept in the area of human relations in industrial medicine, yet it is the one point of view which distinguishes the *art* of industrial medicine from its science. As Wilson and his coworkers[1] point out, "Science is called a science precisely because it does not fear to raise its voice against obsolete and antiquated concepts and postulates; because it lends an attentive ear to the voice of experience and practice demonstrated. Very few have the innate, fortunate talents for arousing people's enthusiasm, or for leading them to new ways of thinking and new ways of life."

Thinking is an arduous task, and thinking of the various problems involved in industrial medicine, aside from those strictly professional, appears at times to be a disagreeable task; it involves thinking not only about medicine but also about psychology, philosophy, theology, ethics, economics, and, last but not least, politics. And what we think about all these depends upon our own assumptions and understanding of the nature of man and of human society. That is why it is so important to have a profound knowledge and sympathetic understanding of the humanities and social sciences if we wish truly to understand the art of human relations in industrial medicine. Osler once said, "By the neglect of the study of the humanities, which has been far too general, the profession of medicine loses a very precious quality."[2] The real tragedy concerning this precious quality is that a great many of the industrial medical fraternity and the profession of medicine as a whole appear not even to have found it!

FROM its inception industrial medicine has traveled a rough and rugged road.[3] By proved performances and accomplishments, the industrial physician has won recognition for himself and for his specialty. Today he is considered an expert in his chosen field. He must prove himself not only in his professional capacity as a doctor but also through his ability to estimate as accurately as possible, scientifically and without bias, the patient's degree of disability. He is even expected to give an opinion as to the probable time it will take to heal an injury, or, in case of death, to formulate a scientific opinion as to the relationship of trauma and disease. Is there any other branch of the medical profession which bears such an enormous responsibility as does the industrial branch?

The most dangerous aspect of human relationship in industrial medicine is its reflex action. As Rieke[4] puts it, "In day-to-day practice one sees numerous instances of workman frustrations." One of the most complex of these is the medico-socio-economic problem almost daily encountered and almost constantly ignored. Here the indus-

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trial physician has his work before him.[5] For upon him rest the duty and responsibility of creating the proper mental environment most conducive to the patient's recovery. We have learned to do marvelous operations, invented extraordinary apparatus like the new nuclear microscopes[6] and atom-powered x-rays,[7] mastered the latest knowledge and technique in the use of antibiotics, hormone and isotope therapy. But is it this which distinguishes human medicine? Work and speech are what distinguish man. Herein lie the hitherto little explored opportunities for the industrial physician in particular.

The emotional factor differs greatly in various patients, and the degree of frustration and pleasure is easily discernible to the alert industrial physician. During my 33 years in this special field of medical practice, I have observed that the physical pain or the physical disability alone rates as a minor factor—as a negative frustrating, anxiety-provoking factor in the majority of industrial workers. Every patient has his own way of withstanding pain; each seeks and finds his own method of combating it. What appears to trouble the injured industrial worker most is not the pain or the disability *per se,* but rather what seems to him the indifference of some industrial physicians, or their staff members, or their medical colleagues, who all appear to be more preoccupied with diagnosis and treatment than in achieving a sympathetic understanding of what is to happen to him at the completion of treatment, or what is happening to his dependents while he is under treatment. The worker's anxieties and frustrations, whether justified or not, are definitely real in this respect, and it is foolish for the industrial physician to gloss over them. This is also the problem of the physician who cares for an industrial patient. Whether he likes it or not, it is the duty of the industrial physician to educate the worker.[8]

Hope is natural to man. We have only to learn how to sow the seed of hope. It is as criminal not to offer hope, even by indirection, as it is to take away all hope. Does this mean that we have to deceive patients? Here is a case history from a colleague's experience which makes the point. As he entered the room, the patient said, "I'm so glad you came, doctor, I think I must be dying. It's so difficult to breathe."

"But why did you especially ask me to come?" he inquired. "You have a good experienced doctor living almost next door."

"Well, how can I explain?" said the patient. "I don't deny he is a good doctor; we all know that. He diagnosed my husband's illness. He told me it was cancer of the esophagus, and that he would die. And my husband did die."

"Your doctor was correct. That's the sort of disease it is."

"Yes, but would he have died so soon if he hadn't lost all hope? You will remember, doctor, when I was under your care for a broken hip and when I asked you, Is there any hope that I will ever walk again?, you only said 'there is no such thing as a hopeless case,' and I felt lighter and braver in my heart because of what you said."

Which doctor is right? The one who tells a patient the terrible truth and deprives him of all hope, or the doctor who simply says "there is no such thing as a hopeless case" even though in his heart he knows the case is hopeless? All I am pointing out is that when the patient was troubled in mind and spirit, the doctor who did not deny hope was the one for whom she called.

With the creating of a healthy mental environment, the industrial physician also creates a better doctor-patient relationship. This is true of his entire professional and non-professional personnel, as well as the hospital which cares for the industrial patient. Teamwork must be developed so as to create an optimum response in the patient to his emotional, medical, and physical needs, even though he may not be satisfied with his economic lot. The length of his hospitalization or treatment period might well be affected and increased if the personal human relationship toward him is neglected by one or all of the medical team. It is obvious, of course, that stable maintenance of this human relationship toward any industrial patient does not entirely rest with the medical team. An industrial medical practice when well organized[9] and functioning properly can definitely be advantageous to all concerned, *provided the patient is also considered part of the team.*[10]

PATIENTS treated for industrial ailments or injuries, whether in the industrial physician's office or in a hospital, often harbor fears and anxieties, not so much of being overtreated or overhospitalized (and this may well be the case in some instances) but fears and anxieties concerning their economic situation. Whatever misgivings the industrial patient may have towards the industrial physician or his staff, or the hospital and its personnel, with proper sympathetic understanding and proper human relationship he can be made to relax and thereby become more receptive to treatment, and can be convinced that all the medical team wishes for him is speedy recovery in the shortest time. This philosophy must be impressed again and again not only upon the patient but also upon the physician himself, and his medical and office team-mates. This is not as easy a job as it sounds, but it can be accomplished. As Leggo says, "If the industrial physician can lead the patient to realize that his true self-interest lies in recovery, or minimizing his disability, he can consider himself a good therapist."[11]

We have our own standards as to what makes a

good doctor, but patients also have their evaluation of us. Whose is the more exact criterion? Even with a fine knowledge of medicine plus excellent technique, the doctor can still be a poor physician in the eyes of the patient. What makes a doctor is knowing not only how to help the patient with medicine, but with speech and faith as well! I invited some 2000 individuals to answer the question: "What in your opinion constitutes a good doctor, and why?"

The answers fell into four categories:

1. "He cured me."
2. "When I talk with him a load seems to drop off my chest."
3. "He has feelings in his fingers; he finds out my troubles without hurting me."
4. "He understands my illness; he is attentive, he spent a lot of time examining me, and was concerned not only about my illness but about my economic condition as well."

The majority of answers fell into the last category. In this there is a great lesson.

IT IS PRECISELY because of his elaborate and profound training that the industrial surgeon must set the pace and must teach others not only in the science of medical practice but also in the art of human relations in industrial medical endeavors.[12] Herein lies the future of industrial medical practice, as Goldwater has pointed out.[13] It is important and necessary to consider what the injury means to the patient, but it is infinitely more important to consider what emotional effect it has upon him. Kluberton[14] expressed this in these words: "A doctor must be considerate of the whole man, he must be observant, cautious and attentive to each patient on the presumption that his is the individual and special case."

Aside from his professional considerations of the case, the industrial physician must also think about these questions: Will the patient be fit for duty at his previous occupation when treatment is completed? What will be his opportunity of securing a job if the condition for which he was treated left him with disfigurement or a permanent disability? Is this disability noticeable to others? How will family, friends, and society in general accept him?

You may say this is not within the province of industrial medicine. It is definitely not only within its province but it is also the heart of human relations in industrial medicine, as Sappington[15] pointed out many years ago. We as industrial physicians cannot afford to side step this important aspect of our relationship with our patients. We must have a sympathetic approach to the entire problem, not merely to its medical phase. If we fail to understand this, we stand a good chance of laying ourselves open to the charge of being derelict as good doctors. "He who works with his hands is an artisan; he who works with his hands and his brain is a technician; he who works with his hands and his brain *and* his heart is a true artist."[16]

The practice of lending a sympathetic ear on an objective basis can do much for good human relationships in industrial medicine. It puts the patient at his ease and causes him to gain confidence in the physician. The industrial patient is probably more sensitive than the average private patient, and must therefore be prepared psychologically at all times. Thus "psycho-prophylactic" conversations aimed at dispelling anxiety and fear constitute good treatment in all cases. The industrial patient doesn't expect charity or pity in any form, and he abhors paternalism. What he expects and wants is the earliest opportunity to earn a decent living at a decent job with job security, so that he may support his family and enjoy the truly American way of life. Of course there may be a few emotionally immature who perhaps "enjoy" the illness or injury from which they are suffering because they may be the beneficiary of some form of monetary compensation during such an episode. Nor can we disregard completely those who may feel that their incapacity means escape from work or other circumstances. However, my own research shows that the percentage of malingering among industrial workers is less than one-tenth of 1%,[17] and such individuals are usually recognized by the alert industrial physician. Even in such instances, the establishment of cordial doctor-patient rapport at the start often results in the physician's more intimate understanding of the emotional immaturity with which he has to deal, and consequently his better handling of the individual.

PROFESSIONAL isolationism is a thing of the past. Integrated knowledge from all the humanities makes it so. The industrial physician must be a strong leader in order to guide his own personnel first of all, and must also be humble enough to learn from them. The special qualities the industrial physician must possess for genuine leadership in the scheme of human relationships in industrial medicine are endless. These qualities cannot be developed overnight, nor can they necessarily be obtained just from "books of learning." Rather they are acquired through constant observation and a growing awareness of the role that human relations play in his own daily life. Such understanding as I may possess was acquired by persistent day-by-day work. I have found that joy actually accelerates the healing time of wounds in some cases by as much as 90%. On the other hand, I have found that anxiety and fear in patients are connected with life and death. Grief, fear, unpleasantness, insecurity —all are fertilizers of disease. People with shat-

tered nerves are less able to fight infections.

None of this is new to you; but I suggest that it should be re-examined from the industrial physician's point of view, and in light of its relationship to his successful treatment of industrial patients.

The industrial physician should learn something each day concerning the many facets of human relationships. The smallest and most obscure individual can give the great world a little push toward things worth while. As every candle burning in a dark room makes the task of lighting that room easier for all other candles in it, similarly every kind and generous deed makes it easier to elicit kindness and generosity from the human race as a whole.

IN SUMMARY: Professional isolationism is a thing of the past: integrated knowledge from all the humanities makes it so. The special qualities which the industrial physician must possess for genuine leadership in the scheme of human relationships in industrial medicine are endless. He must never forget or neglect the study of the humanities and the social sciences, as the medico-socio-economic aspect of this relationship with his patient is almost daily encountered, and is one of the most complex of his problems.

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Shh!

ONE THING that technology with its factory whistles, sirens, motor horns, telephone and other bells, agents of transportation, typewriters, adding machines, subtracting machines, machine guns, and engines in general has failed to produce on any significant scale is silence. And with reference to noise, the classical antonym of silence, even a mention of the subject automatically raises the question why radio announcers, in plugging a product to their friends the nation over, find it necessary to talk not only faster but louder as their time approaches its blessed end. In any consideration of silence or of noise the human voice should not be neglected. That silence is, or has been, appreciated is attested by the literary allusions that have been made to it. In the index to Bartlett's Familiar Quotations, 1937 edition, for example . . . . the references range from Silence, a time to keep, through Silence, give me but, Silent dark o'ershadowing tomb, and Silent upon a peak in Darien, to Silently steal away. The poets, at least, appreciated silence.

—From "Silence, Like a Poultice," Editorial in *New England Journal of Medicine*, September 6, 1956.

Prevention of Back Disability through Pre-Employment X-Rays

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THIS STUDY was made to gain some impression of the problem of back disability—both medically and economically—and to evaluate the role of pre-employment x-rays in the prevention of back disability.

In a National Safety Council release of October, 1955, the seriousness of the back injury problem was emphasized by giving a year's experience of the Commonwealth of Pennsylvania with more than 6,900 back injuries reported, amounting to $1,500,000 in compensation payments.

Physicians who treat back injuries are aware of the magnitude of the problem, the difficulty of treating these injuries, and the difficulty of getting the patient free of his symptoms and back to work. The results of surgery of the back—disc operations and fusions—are relatively good in self-employed patients but are poor in employed individuals.

THE material reviewed consists of 109 back injuries seen in our office during the years 1953, 1954, and 1955. All of these patients were employed by the Great Northern Railroad and most of them had a pre-employment physical examination. Of these 109 back injuries the majority were in the lumbosacral region, and fewer in the dorsal and cervical regions. The lumbosacral spine is most vulnerable to injury for two reasons. First, it is least protected by supporting structures in this region, and, second, it is more often subjected to excessive strain by lifting and bending. The dorsal spine is well protected by the ribs and soft tissue and less subject to strain. The injury found most often in the dorsal spine was a contusion type with injury to the soft tissues. The cervical spine is poorly protected but is not often subjected to strain. Injuries in this region are fewer. Table I shows the number of injuries found in each region, and also the number of fractures.

TIME loss is a problem of considerable importance to the railroad and to the workman. In reviewing these 109 injuries we found 44 patients with back injuries who lost no time from work. The severity of injury may have been less, or their jobs may have been less arduous, and they were able to remain at work. Thirty-six cases were away from work for less than 14 days. These two groups, constituting 80 cases, are a minor problem with regard to time loss and future disability. Nineteen cases were off work for more than 14 days. It is this group which presents a serious problem to the railroad, to the workman himself, and to the physician who is treating the case. This latter group does not include nine fractures of the back—which prolong the time loss considerably. One fracture dislocation of the cervical spine ended up a quadriplegic and will never work again. The other eight cases were away from work an average of 99 days. All of these fracture cases with one exception returned to their former jobs. Table II shows the time loss in these 109 cases of back injury. We reviewed all injuries during the year 1955 and found back injuries responsible for 2951 days of time loss, and all other injuries for 2385 days of lost time.

TABLE I.
BACK INJURIES 1953 - 1954 - 1955

BACK STRAINS:	
Cervical	11 cases
Dorsal	13 cases
Lumbosacral	86 cases
FRACTURES:	
Cervical	2 cases
Dorsal	4 cases
Lumbosacral	3 cases

TABLE II.
TIME LOSS IN 109 BACK INJURY CASES

No time loss	44 cases
0-14 days	36 cases
Average of 7.5 days	
14 days or more of time loss	19 cases
Average of 99 days	
Fracture of the spine	8 cases
Average of 100 days	

ALL OF these back injuries were x-rayed by a competent radiologist who submitted a detailed written report on each case. He gave us 27 negative reports in this series of 109 cases. He found arthritis of a significant degree in 51 cases —which would not be unusual, as many of these

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TABLE III.
X-RAY FINDINGS ON 98 CASES OF INJURY OR STRAIN

Arthritis	51
Thinning of the disc	25
Congenital S 1	6
Spondylolisthesis	4
Schmorl's nodes	3
Acute lumbosacral angle	2
Old injury	2
Congenital anomalies	3
Incomplete fusion of transverse process	2
X-ray negative	27

workmen were past 40 years of age. He found thinning of the disc space in 25 cases. He also found a number of other conditions, as listed in Table III, some of which did not contribute to the disability. Arthritis was the most common finding reported in these x-rays, and it probably denotes an aging process and does not contribute substantially to the disability.

IT HAS been the responsibility of the examiner to reject new employees entering the service who may become liabilities. Until 1953 the examiner was dependent on a physical examination and a history to evaluate the workman's back. He was able to evaluate the back as to gross deformities and anomalies and as to motion. On questioning, he was able to elicit history of old trauma and chronic back strain. Since 1953, x-rays of the lumbosacral spine have been used to evaluate some of the new employees, mainly the operating personnel. By this method we are able to exclude the spondylolisthesis, the old injury which the applicant is not aware of, the unstable back with acute lumbosacral angle, and many other conditions contributing to the instability of the lower back. X-ray does not exclude the applicant with a disc or the applicant prone to develop a disc. It does not exclude the chronically weak back which is more susceptible to injury. In these latter conditions the back is likely to be radiologically negative. During the last three years all new applicants for jobs as operating personnel had their lumbosacral spine x-rayed. There were 227 x-rays done, and 54 applicants had sufficient back disease to cause rejection. We have listed the radiological findings in these cases in Table V.

The most common finding was a condition of spondylolisthesis or pre-spondylolisthesis. The

TABLE IV.

Applicants x-rayed	227
Applicants with normal x-rays	78
Applicants with abnormality but not sufficient to disqualify	95
Applicants rejected	54

TABLE V.
PATHOLOGY IN THE 54 CASES REJECTED

Spondylolisthesis	14
Pre-spondylolisthesis	10
Sacralization of the 5th lumbar	8
Congenital deformity of L 5 and L 6	7
Acute lumbosacral angle	6
Lumbarization of 1st sacral	3
Reverse spondylolisthesis	1
Old fracture	2
Arthritis	3
INCIDENTAL FINDINGS NOT DISQUALIFYING	
Narrowed disc	8
Wedged dorsal vertebra	1
Congenital S 1	7
Schmorl's nodule	4
Congenital variation of apophyseal joint	3
Scoliosis	2

TABLE VI.
PATHOLOGY IN 95 CASES ACCEPTED

Congenital first sacral vertebra	31
Congenital variation of apophyseal joints	27
Narrowed disc space	24
Scoliosis	13
Schmorl's nodule	10
Arthritis	5
Wedging of the vertebra	3
Lumbarization	3
Congenital non-fusion of the transverse process	2
Kissing spine	2
Acute lumbosacral angle	1
Old injuries	1
Osteoma of the ileum	1

second most common cause of rejection was sacralization or lumbarization or congenital variation of the fifth lumbar vertebra. There were 173 cases accepted from this group. Seventy-eight had radiologically negative lumbosacral spines, and 95 were accepted with minor pathology in the lower spine. Table VI shows the figures in these 95 cases accepted. Congenital variation of the first sacral vertebra was most common; second was congenital variation of the apophyseal joints. Narrowing of the disc space was found in 24 cases.

IN SUMMARY: The pre-employment x-ray is an excellent method of excluding some of the back disabilities but it will not exclude disc, or prevent fractures of the spine.

(205 Fernwell Building.)

The Traffic Accident Account?

THE EFFORTS of preventive medicine must, in general, be directed against those diseases which cause the highest mortality, and every success against one cause of death simply transfers the debit to another account whose settlement we may or may not be able again to postpone.

—From "Vital Statistics: A Plea for Actuarial Administration and Control of the Great Resources of Preventive Medicine," by JOHN S. FULTON, M.D., of Baltimore, in *American Medicine*, February, 1903.

Citrus Bioflavonoids in the Treatment of the Common Cold

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ECONOMIC LOSS entailed by the incidence of the common cold in industry is estimated to be more than five billion dollars yearly in wages, production, and medical costs.[1,2] The effect of such immense loss justifies the investigation of every therapeutic measure that may prove valuable in the control or mitigation of its cause. It is reasonable to assume that, to the production worker, the common cold impairs his alertness, diverts his attention, and exposes him to accidents; and it is equally reasonable that, in the case of the office worker, it is a cause of lowered efficiency, decreased productivity, and more or less frequent absences.

The treatment of the common cold on the work premises has become increasingly frequent, though the primary function of in-plant treatment facilities has been to render immediate aid in emergencies. However, many employees have been consulting the Medical Department for disabilities, diseases, and complaints other than occupational accidents. As a rule, such patients are referred to their private physicians. Minor illnesses, permitting the patient to remain ambulant, are treated if the employee so requests.

Because of its economic importance in an industrial plant, we are constantly seeking safer and more effective medication for the common cold to replace or supplement the generally used combination of aspirin, phenacetin and caffeine, referred to as A.P.C. With this aim, late in 1954 we began a series of clinical studies using various combinations of citrus bioflavonoid substances with ascorbic acid, and with or without an analgesic. The series is continuing and, to date, 1,831 workers have been treated in five separate trials. An extended report on the entire series is in preparation. The results were so encouraging as to prompt this preliminary report. We believe this report will have interest for the industrial physician because of the increasing discussions in the literature on the use of the citrus bioflavonoids for a variety of disease conditions.

The substances used in our clinical studies were a combination of citrus bioflavonoids described as lemon-orange flavonate glycoside, ascorbic acid and a subtherapeutic dose of acetylsalicylic acid. Lemon-orange flavonate glycoside is a mixture of the bioflavonoid complexes obtained from lemons and oranges. The work of Wilson and De Eds[3] showed that the continuous feeding of albino rats with naringin and hesperidin in a standard diet for a period of 200 days, in concentrations as high as 1% of the diet by weight, gave no indication of immediate or cumulative adverse effect as judged by growth curves, blood sugar levels, weight of important viscera, and macroscopic and microscopic examination of these tissues. That ascorbic acid reduces the toxicity of acetylsalicylic acid in a similar manner as takes place when ascorbic acid is added to sodium salicylate was reported by P. K. Smith.[4]

Our objective was to determine the effectiveness of the lemon-orange flavonate glycoside-ascorbic acid-acetylsalicylic acid combination. As control for comparison, a combination of aspirin, phenacetin and caffeine (A.P.C.) was used. This medication, rather than a placebo, was employed because it was necessary to afford palliative analgesic relief to the patient if we were to obtain his cooperation and his return from time to time for observation.

For our purposes, it was required to adopt certain diagnostic criteria whereby the presence of a common cold was to be established. It is doubtless true that the patient is best qualified to assist in the diagnosis of this type of respiratory involvement. Subjective symptoms, i.e., vague muscular pains, headache, a feeling of illness reported by the patient and supported by the objective symptoms of intranasal congestion, more or less frequent sneezing, excessive discharge from the nose, coughing to expel mucoid discharge, inflamed appearance of the throat, lacrimation, and sometimes slight elevation of temperature, were accepted as confirmation of the complaint when the patient presented himself at the Medical Department. While these symptoms may be precursors of certain infectious diseases other than the common cold, a differential diagnosis often can be made only by ensuing developments.

Further difficulty arises in the diagnosis of the common cold by the similarity of the symptoms presented by vasomotor rhinitis and other allergic

reactions. Such conditions, however, can be differentiated by careful history-taking, revealing the more or less chronic nature of the manifestations of sensitization. The elimination of the causative factors of allergy is, of course, the primary aim of treatment. Mitigation of the symptoms of allergic rhinitis or non-specific rhinorrhea can, to a degree, be obtained by similar remedial measures as those employed in other forms of nasal irritation. This holds especially true in the advanced stages of the attack when the vestigial symptoms of the allergenic influence remain after the etiological factor is no longer present.

Procedure

TO MAKE THIS study possible, workers were encouraged to seek relief at the dispensaries when suffering from an infection of the upper respiratory tract, particularly from the common cold. If the physical examination and questioning of the patient revealed no other symptoms than those of the common cold or probable allergic reaction causing rhinitis, a record card was started. On this, in addition to biographical data, notation was made of the objective and subjective symptoms, and the number of days the patient said that he or she had been suffering from the common cold. The examiner indicated whether he agreed, disagreed, or was uncertain that the patient suffered from a common cold. Each report form was serially numbered with one color for one type of medication, and a contrasting color for the other.

The patient was given 16 capsules, a two days' supply, in a container with a dot on the closure identical in color to that of the serial number. The instructions were to take two capsules every four hours and to return to the dispensary on the following day. On the second day, the patient was examined and questioned, and the progress was entered on the record card. The same routine was followed on subsequent days, and an additional two day's supply of medication was dispensed.

The materials used were capsules containing 100 mg. of lemon-orange flavonate glycoside, 50 mg. of ascorbic acid, and 3.5 to 4.5 grains (226.8 mg. to 291.6 mg.) of acetylsalicylic acid. The contents of the capsules, identical in appearance, even to the color of the materials, used for comparative controls, contained 1.3 grains (84.24 mg.) of acetylsalicylic acid, 1 grain (64.8 mg.) of acetophenetidin, and 0.2 grain (12.96 mg.) of caffeine. The control medication was a modified form of a more or less standard pharmaceutical combination used regularly in this establishment for the symptomatic relief of the common cold. This dosage was considered equivalent to about 10 grains (648 mg.) of aspirin.

The requirements for inclusion in the study were that (1) each person must have taken eight capsules of either medication within the first 24-hour period; (2) the record card was complete in all essential particulars; (3) the examiner agreed that the symptoms were, insofar as could be determined, those of the common cold; (4) the patient was not taking other medication during the period of observation, and (5) that he or she appeared on two consecutive days for examination and observation. Records were available on 186 persons whose cases met all the requirements for the study.

Results

THE CRITERIA by which the results were judged comprised (1) the prompt or gradual subsidence of the usual symptoms of the common cold; (2) the degree of improvement reported by the patient and the evident remission of his symptoms up to and on the third day after medication was commenced; (3) the answers of the patient to the question whether the medication was noticeably of benefit during the period of observation, and (4) whether complications or sequelae ensued.

In this study, it was not practicable to place proper diagnostic interpretation in the instance of those who complained of a cold of less than one day's duration. For that reason, these cases were not considered as statistically significant. Records of 65 persons were not included because their colds were of less than one day's duration. Of the 121 remaining, the results obtained were as follows:

Progress on second day of medication	Lemon-Orange Bioflavonoid Comb. No. of Patients	%	A.P.C. Combination No. of Patients	%
Complete or substantial relief	46	74.2	30	50.9
Unchanged	16	25.8	29	49.1
Totals	62	100.0	59	100.0

As will be seen from the table, the patients having colds of one day's duration or longer prior to first examination, have supplied more accurate information upon which conclusions could be based. In this group, 74.2% were classified as having complete or substantial relief from symptoms, while similar relief from the analgesic combination was 50.9%, a differential in favor of the bioflavonoid medication of 23.3%.

Inquiries as to side effects noted by those taking either medication were not productive of relevant information. There was no evidence of toxic action in any of the cases observed, and no idiosyncrasy or allergic manifestation.

Comment

UNTIL the etiology of the common cold is definitely established, treatment can be directed

only empirically toward the relief of symptoms, and in this way possibly shorten the duration of the discomforts attending a cold. It is a useful approach, because it enables the industrial worker to remain at work. There is some indication that a course of treatment with the bioflavonoid combination used in this study may also exert a preventive influence against recurrence in those subject to frequent colds. This influence remains a subject for further investigation.

Clinical research in the field of upper respiratory disease is beset with difficulties when no opportunity is afforded to study the personality traits of the patient, and to determine the threshold of his reaction to various influences, including the psychic factors.

A belief exists that stress is a factor in predisposing to the common cold, and the administration of antihistamines may abort a cold at the early stage when it is due to an allergenic influence. The evidence to this effect is insufficient and inconclusive. Because of the soporific action of these drugs, their use in industrial practice is obviously inadvisable if the patient is to remain at work.

Our observations make it reasonable to believe that a combination of citrus bioflavonoids with ascorbic acid and a subtherapeutic dose of aspirin is a more desirable medication for the symptomatic treatment of colds than are the analgesic drugs, with or without the antihistamines, because these drugs may expose the patient to lassitude and somnolence, impairing his alertness to his surroundings. This, in turn, may lead to reduced ability to perform his duties efficiently and safely. It is not improbable that defects in workmanship and lack of attention to safety are the result of the obtundent and depressing effect of analgesic drugs, which the small quantity of caffeine usually present does not counteract.

No report has appeared in the literature suggesting that the bioflavonoid-ascorbic acid combination has analgesic properties. In view of the results evidenced in our study, the citrus bioflavonoids apparently have a definite influence on the symptoms of the common cold through some effect other than merely masking the patient's awareness of them.

Conclusions

1. CLINICAL tests indicate that a combination of citrus bioflavonoids (lemon-orange flavonate glycoside) with ascorbic acid and less than an average dose of acetylsalicylic acid (3.5 to 4.5 grains) exerts a mitigating and probably curative action on the common cold, as shown in comparison with a combination of acetylsalicylic acid, phenacetin and caffeine.

2. Because of the subtherapeutic quantity of acetylsalicylic acid present in the bioflavonoid combination, the effect cannot be attributed to the analgesic alone.

3. In the various groups, as high as 74.2% of the test subjects reported and exhibited complete or partial cessation of the usual manifestations of nasal irritation on the second day after medication. It is probable that even better results could be obtained by the use of higher doses of bioflavonoids.

4. No untoward reactions, toxic or allergenic, were observed from the citrus bioflavonoid, ascorbic acid and acetylsalicylic acid medication.

5. The bioflavonoid, ascorbic acid and acetylsalicylic acid combination appears to be preferable for the symptomatic treatment of the common cold, because it produces no lassitude or drowsiness, which may cause impairment of alertness or interfere with the proper performance of the usual duties.

6. The high rate (74.2%) of complete or substantial relief obtained on the second day of medication with bioflavonoids in cases where the cold existed for one day or longer makes it reasonable to assume that early treatment may exert preventive action upon the development of symptoms. This influence requires further investigation.

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"Calls the Physician"

FOUR HUNDRED FIFTY-SIX industrial plants in Massachusetts employ occupational health nurses. A recent survey of these firms revealed that 18 have full-time medical coverage, 242 have part-time medical coverage, 104 provide "on-call" medical coverage, and 92 offer no medical coverage at all. In plants which offer "on-call," or no medical coverage, the occupational health nurse calls the physician whom the patient chooses in an emergency.

—From "The Nursing Diagnosis—An Exercise in Judgment," by GERTRUDE J. HORNUNG, in *Nursing Outlook*, January, 1956.

A new wing under construction will be completed in 1956.

The Dhahran Health Center

Arabian American Oil Company
Saudi Arabia

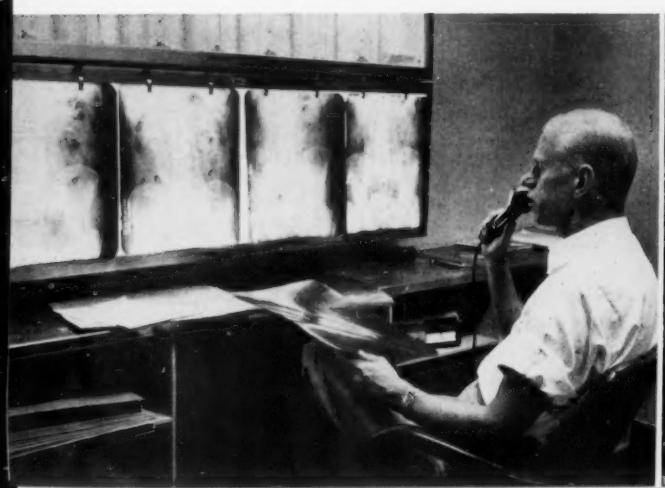
THE DHAHRAN Health Center of Arabian American Oil Company in Saudi Arabia has been fully accredited by the Joint Commission on Accreditation of Hospitals in the United States.

This announcement by Aramco's Medical Department followed the decision of the Commission after approval of a report on the Dhahran Health Center given by Dr. Kenneth B. Babcock, Commission Chairman, who visited Dhahran in April. The Dhahran Health Center is one of the few hospitals outside of the United States and Canada to receive this full accreditation. Medical Director of Arabian American Oil Company and, of course, of the Dhahran Health Center, is Dr. Robert Clinton Page. Dhahran Health Center was built at a cost of $3,500,000, and embraces a clinic, a 340-bed hospital, and a research section. An additional 67-bed medical wing and a 40-bed isolation ward are now under construction. When these are completed, the Center will represent an investment of $6,000,000.

The two identical outer wings of the building constitute the hospital. The ground floor of the central wing houses the clinic, laboratories, x-ray, physiotherapy sections, and the pharmacy. All these are accessible from both corridors. Reception rooms are provided for patients waiting to be called.

On the second floor are the Department's general headquarters. Dr. Page's office is there, and

The radiologist in the Dhahran Health Center dictates his reports of x-ray examinations.



The training program takes future nurses into the operating room where they witness surgical techniques.

A Saudi doctor, American nurse and Indian attendants work in the children's ward.

An entomologist checks water in the Qatif oasis for the presence of mosquito larvae.

those of his Assistant Directors, the administrator of the Center and other key staff members.

DOWN the hall from Dr. Page's office one can look through the glass doors of the large and superbly-equipped research section and see scientists and doctors of Harvard University and Aramco striving to develop a vaccine that will prevent trachoma, the eye disease that affects so many millions of people all over the world. Aramco has appropriated $500,000 for a five-year project which has been undertaken in cooperation with the Harvard School of Public Health.

Through another door can be seen skilled entomologists studying different types of mosquitos in an effort to learn more about their apparent capacity for developing resistance to insecticides. At the far end of the hall is a section occupied by mice, rats, rabbits, and guinea pigs from which researchers are seeking new knowledge of nourishment and disease.

There is a fine medical library equipped with tape recordings and microfilms of the latest lectures and papers on specialized subjects, and there is a conference room with equipment for showing films.

THE DHAHRAN Health Center carries a heavy load. In addition to the medical needs of over 21,000 employees and their families, much care is provided for the public. It was pointed out by one physician that 51% of the hospital beds and 28% of the clinical facilities are being devoted to the general public. These services are either given without charge or are heavily subsidized. In five years, from 1955 to 1959, services to the general public will cost Aramco $8,500,000.

The Center maintains a staff of nearly a thousand, including 56 physicians, three dentists, 260 nurses, and 34 technicians. There is also a staff of highly trained specialists, including radiologists, pathologists, and an ophthalmologist. The clinical facilities are capable of treating 50,000 outpatients per month. It also operates a nurses' training school with 82 students who will be well equipped to embark on practical nursing careers with Aramco or private Saudi Arabia hospitals.

Patients include men, women and children of many nations. There are Saudis, Lebanese, Pakistanis, Sudanese, and Indians; and there are also Americans, Dutch, and Italians. Caring for them are doctors, nurses, technicians, and others of as many different nationalities.

Director of the nursing school, and the Director of Nursing show nursing students how school teaches bedside care.

Isolating the enemy: medical technicians sort species of flies to be dealt with in the fly-control program.

Detection of Chest Disease

—BY SURVEY METHODS

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THE DETECTION of chest disease should be approached from two angles—the clinical picture and the roentgenographic. However, in our experience, so far as the preplacement examination is concerned, history-taking is useless since, in the desire to obtain work, most applicants deny the presence of symptoms or a history of major illness. This was dramatically demonstrated when we attempted to use male food handlers over 45 years of age as a control group for men of similar age who had voluntarily joined the Philadelphia Pulmonary Neoplasm Research Project, a research project studying the relationships between symptoms and x-ray changes in lung cancer. Over 25% of the Philadelphia Pulmonary Neoplasm Research Project men had symptoms, but no food handlers admitted the presence of symptoms. We were aware of the fact that men joining our Project might well be more symptomatic than a random sample of men over 45, but we knew that food handlers over 45 must suffer from some of the common respiratory symptoms.

In the preplacement examination, therefore, it is wise to rely on objective evidence—largely the miniature photofluorogram. It is important that these films be over-read, preferably by two readers interpreting independently. In the presence of any abnormality, the applicant can be interviewed and assured that his frank discussion will count much toward deciding the matter of employability. Under such circumstances, the applicant usually tells the truth, often having rightly or wrongly given up hope of securing the job and being seriously interested in obtaining information pertinent to his health. Toward this end, it is wise to withhold information as to the nature of the film abnormality at first. If pressed, the comment is: "We will be better able to interpret the meaning of the abnormality in the x-ray after having talked with you and found out just what the situation is in regard to your symptoms." A second device employed is routine preoccupation with signing letters or some such procedure for the first two or three minutes after the applicant has been shown into the room. Seeing the physician obviously occupied, the patient relaxes and, if cough is present, the trained and attuned ear of the physician notes the unmistakable sound of loose secretions. A sputum bottle—a supply of which should always be kept in a desk drawer—promptly and unexpectedly thrust before the waiting patient with the casual comment, "just expectorate that in here," has frequently resulted in obtaining a positive sputum specimen. Otherwise, it is not uncommon for the person to deny sputum, and this may be done honestly, the individual actually being unaware of the presence of sputum.

THE FIRST question asked should be aimed at relaxing the patient: "Forgetting your chest x-ray, suppose I met you on the street today and asked 'How do you feel?', what would you answer?" The reply to this question often reveals a great deal about the applicant's personality: "I felt all right until I got the letter asking me to come in to talk about my x-ray, but now I have pains all through my chest." or "I never felt better in my life!"—said with conviction and apparent integrity. A reply of "Oh, I feel all right" is often the one obtained from the clinically ill patient who, when questioned as to why he didn't reply that he felt fine, often comes up with a history of being tired—a very significant reply, or of having not felt up to par since a "cold" or a "virus," etc. The onset may best be dated by pursuing the matter of vague lack of optimal health by the question, "When did you last feel really in tip-top shape?"—and, if dating this is difficult, attempting to relate this to a holiday or anniversary or some current event: "How did you feel last Christmas?", "Were you feeling full of pep at your last birthday?", etc.

The greatest practical help is obtained by asking, "Did you ever have a chest x-ray before?" because comparison of serial films is of tremendous help.

The recording of temperature at the time of interview may be helpful. The absence of

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tachycardia is reassuring when considering the possibility of active tuberculosis, though a fast pulse may be due purely to nervousness. In a difficult situation, when pressed in regard to the employability of a much-needed person, a sedimentation rate may help. If time permits, a negative tuberculin test will rule out active tuberculosis for all practical purposes in anyone well enough to be applying for work.

WHO should be employed? Let us first consider the survey classifications of film abnormalities: negative, suspect tuberculosis, probably negative but a 14 x 17 indicated (60-70% of such persons should be "negative" on the 14 x 17 retake), other pathology than tuberculosis including "suspect neoplasm," cardiac and aortic disease, etc.

The category "employable" includes the following:

1. Those with *"negative" photofluorograms if there are no abnormal physical findings on clinical examination* (unilateral wheeze, rales, etc.). What will be missed in employing such persons? No tuberculosis if photofluorograms have been properly read; possibly a rare early cancer in men over 40 or 45; bronchiectasis if without cystic changes during a dry phase.

2. Those with *fibrocalcific lesions on whom earlier similar films are available for comparison.*

3. In all other instances it is well to have available the opinion of a chest consultant. When a prospective employee gives an honest statement that he has had pulmonary tuberculosis, lobectomy for bronchiectasis or for some other chronic disease of the chest, he should not be summarily rejected but should be evaluated.

In regard to those with a history of tuberculosis, there should be an estimation of the original stage of disease, and a review of films and of the report from the physician or clinic who treated the patient. There is no reason why a cooperative individual who has received adequate therapy for pulmonary tuberculosis should not be employed in industry in a suitable position. The problem today is complicated by the long-term therapy of tuberculosis. A man may have arrested tuberculosis and yet be continuing on medication for another year during which it may be permissible for him to be working. The opinion in regard to employability in such instances should always be made by a competent chest specialist.

There will be some instances in which a review of the previous handling of such a case will cause the chest consultant to suggest other studies, including sputum cultures or gastric washings, as a requirement for employability. There will be occasions when the tuberculosis has been inadequately treated and the individual must be rejected for employment. The plant should feel enough interest in the welfare of its community to take the opportunity, while rejecting such an individual, to use the interview for indoctrination of the patient. If inadequate therapy has been due to lack of cooperation of the patient, the need for further therapy should be explained. If it has been due to poor treatment on the part of the physician, a report to the responsible doctor explaining the reasons for rejection may cause the physician to change his plan of treatment.

Where previously unsuspected obviously active disease is uncovered, the problem is one of diagnosis. A pneumonitis that clears within a few days is not a cause for rejection unless one suspects an underlying bronchiectasis. Even so, it is wiser to advocate diagnosis and therapy and a subsequent review in regard to employability than flatly to reject these applicants.

Where there is obviously active tuberculosis, rejection is indicated, but the plant is part of the community and it is not enough to reject such persons but to see that referral to a chest specialist or clinic is made. The shock of being told both that one is unemployable and probably seriously ill with a disease that still has connotations of the untouchable as well as of a protracted course and a possibly fatal outcome is more than some individuals can bear.

TODAY, with the concentrated effort being made to continue older persons at work, the problem of lung cancer looms larger. We know little of the natural history of this disease, our convictions being largely based on analyses of surgical series in which symptomatic persons consulted physicians late in the course of their illness. The asymptomatic male applicant over 45 years of age with a solitary nodule without earlier films for comparison is a *real* problem. If planigraphy reveals central calcification and the tuberculin test is positive, employment is justified. On the other hand, without these supplementary findings, it seems unwise to employ such men but rather to encourage them to seek expert consultation.

What of the older man with a negative photofluorogram and unilateral wheeze? We feel this finding is as suspicious of neoplasm as is obstructive emphysema or atelectasis, and we advocate bronchoscopy with cytologic examination of bronchial secretions in such cases. Whether management will temporize long enough for such investigations to be carried out is questionable. However, large companies not infrequently refer problems of this type to chest specialists, particularly when men are being considered for promotion or for executive positions.

THE MATTER of periodic check-up is of importance. It is wise to maintain a master alpha-

betic file of cards on all employees, together with a separate duplicate file on those with film abnormalities. Abnormal photofluorograms should be cut from the roll and kept with the records. Negative films should never be destroyed. but should be kept available for future comparison.

IN SUMMARY, annual chest x-rays are advisable for all adult employees, but semiannual films should be taken on the following categories of workers:

1. *Diabetics* because they have twice as high a prevalence of tuberculosis as do non-diabetics.

2. *Silicotics* because they are likely to develop suppurative disease, tuberculosis, and emphysema. (Inspiratory and expiratory photofluorograms as well as timed vital capacities will form a good running record of their situation.)

3. *Men over 45* because of their higher prevalence of lung cancer.

A screening history may be of little value in a preplacement examination, but physical and radiologic abnormalities are of great significance. The latter should be interpreted with wisdom and not form the basis for a blanket policy of rejection on the basis of *any* abnormality.

The Pedestal

FINALLY we must consider the moral training of surgeons. When we are screening applicants for various positions at all points in their medical career, from the very beginning, we customarily require testimony as to their character, but we are inclined to look upon this requirement as rather perfunctory. Our high ideals should not be forfeited; nor the rightful position of medicine in society as an uncorruptible bedrock of devotion to the welfare of our fellow-man. All medicine—and surgery as a part of it—will be the better for an effort to police ourselves; yet this cannot be done by a few interested men working in a morass of apathy but must spring from a considerable segment of medicine with the combined weight to give such a movement impetus. Surgeons are accustomed to responsibility; they are accustomed to independence and to leadership. They should represent an ideal group to give substance to this effort. In the training of the surgeon of the future all those concerned with this training must realize that medical knowledge is still fluid, a shifting body of wisdom which does not channel itself according to signs hanging over the doors of specialty clinics. Nor unrelated to all these problems is the problem of the surgeon's concern for his patients which has so often been called the "art of surgery." In the midst of all our specialism I wonder if we sometimes lose sight of the patient and whether, as Osler said, "the ceaseless panorama dulls the fine edge of sympathy with which we started." In the new world of social medicine which many say is upon us, medicine may well reach out to join forces with psychology, sociology, economics, anthropology, and statistics. The hard core of science which was left behind in the pre-clinical years may well give way to the statistical methods of the social scientist and the clinical records of the psychiatrist. If this be true, we shall all meet probably in a sort of nebulous cloud of estimates, observations and half-truths before anyone is able to sort out the sense from the nonsense. In this brave new world, I hope that surgery will remain the pedestal on which to test the half-formed ideas, the careless hypotheses and the intellectual laziness which have been creeping upon us. Surgeons have always been more sharply disciplined by their errors than other men. They have been drawing closer to the pre-clinical sciences in many respects. In many of our medical schools, clinical departments are giving financial support to pre-clinical departments, a tacit admission of the surgeon's responsibility for adequate pre-clinical teaching.

—From "Reflections of a Surgeon," by I. S. RAVDIN, M.D., F.A.C.S., John Rhea Barton Professor of Surgery, University of Pennsylvania—Address at the Dedication of the Ethicon Laboratories, Somerville, New Jersey, Friday, September 21, 1956.

Overtreatment Dermatitis

COMMENTS ON THE LABELING AND PROMOTING OF DERMATOLOGIC DRUGS

L. EDWARD GAUL, M.D., Evansville, Indiana

AS A RULE, the family medicine chest holds quite a collection of drugs for the skin. This traditional storage cabinet has become a common cause of skin diseases. Too often, its etiologic role remains unexposed. People for ages have maintained an aura of the supernatural about skin remedies. They are needed even if they are proved injurious. Any biting, stinging, smarting, burning, or staining is thought to be their healing or germ-killing powers at work. Putting something on under the disguise of treatment, or prevention, of an imagined affliction, is a widespread public practice.

All it takes to start the daubing is a trivial injury, itching, or a little irritation. What is put on is purely a matter of what is handy. An aged concoction is apt to be rubbed in first. The owner has found a reason to use it up. If the injury becomes irritated, or a rash appears, this is thought to mean infection has set in, and another drug is needed. As many as four to six remedies containing 20 to 30 chemicals might be used the first day. Mention of the word "eczema" dismisses all worry about the disease because time is needed to try out a sampling of the nostrums. Relatives always have a thought about the condition and come over with something that helped them. Weeks, months, and maybe years are spent talking about, guessing at, and treating whatever it is that is affecting the skin.

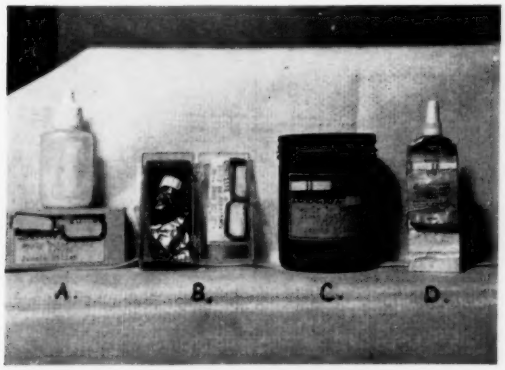


Fig. 1.
Overtreatment Dermatitis from Mixing Proprietaries and Prescriptions.

Past-treatment patch test reactions were strongly positive—a flaring erythrodermia to prescriptions A and B. There was no reaction to C. The druggist disclosed that A was a hydrocortisone, antibiotic lotion, and B was the ointment form. The composition of C was not requested. When the patient saw the positive tests, she recalled using preparation D two weeks before going to a physician. The remedy was the same as B. It had caused a worsening of the dermatitis on the leg. Her physician was not aware of this and had prescribed the same drug not once, but twice. Generalized dermatoses are common sequelae from admixing proprietary and prescription drugs on the skin.

Only when dermatologic complications develop, such as spreading, pustulation, adenopathy, edema of the eyelids, or a sudden generalized dermatitis, is faith in the "cure it yourself concepts" shaken. Now the remedy experts retreat in awed silence. "Isn't it awful; it got way ahead of us." At this critical stage, a doctor is wanted immediately, and sometimes in the middle of the night. Trivial and unimportant skin complaints have been changed into medical emergencies by the lay-therapists. Ointments, lotions, creams and tinctures usually admixed with cosmetics must be scraped back to see the underlying dermatitis. Some recent experiences will be described.

Sensitization to Antibiotics

CASE J. M., is a white housewife, aged 52, who worked part time in a cafeteria. She was seen as an emergency. A vesicular and bullous dermatitis affected the face, neck, chest, back, and upper extremities. The eyelids were swollen. She could not move her fingers or bend the elbows. Blotches of bright erythema were beginning to develop on the thighs. Itching was pushing to a climax. The attack had come on without warning during the early afternoon. Venous surgery had been done on the right leg two years ago to relieve a stasic ulcer. A dermatitis had developed in this area during January, 1956. While the acute stages of the eruption were subsiding, the medications were collected (Fig. 1).

COMMENT: When this patient was well, the history of the dermatitis was again reviewed. It was learned that she had not looked at the labels. When the words hydrocortisone and antibiotic were mentioned, she assumed a blank expression. All she knew about the tube of ointment was how to use it. Remove the cap, squeeze, and what came out was to be rubbed on the skin. Irritation from the preparation was thought to be the concern

of those who made the medicine, and she was sure that her druggist would not sell anything that would harm her skin. The label on D made no reference to possible sensitization.

Fig. 2.
Past-Treatment Patch Test Reactions to the Antibacterial.

Patch test reactions to (A) antibacterial soluble dressing and to (B) dressing medicated with same antibacterial. The dermatitis on the left second finger from wearing medicated dressing is also shown (C). The patch test reactions consisted of a flaring dermatitis with deep-seated vesicles. The pruritus was intense. The test reactions took over six weeks to subside, and it is anticipated that itching will occur at the site for several more months. An antibacterial that induces severe symptoms and a psoriasiform dermatitis that takes weeks to disappear is, in terms of toxicity, a far more dangerous therapeutic agent than one in which the reaction disappears in a few days. A person developing therapeutic sensitization from this antibacterial may need three months to recover. In terms of morbidity, this classes it as highly toxic. Dermatitis from antibacterials is a common therapeutic paradox: the attempt to prevent a possible disease causes one. The patient lost six weeks work.

The physician advised a therapy already used by the patient to a point of producing, or at least conditioning, the incubation period for sensitization to the drug. If he had read the promotional information, he would have been told that the drug would snap the cycle of itching, scratching and infection. It offered a new outlook for stubborn conditions. Unlike many remedies which harshly overtreat, the drug was bland—no sensitivity reactions, no stinging—and it was smooth and gentle. These claims were not true. Itching became an emergency symptom. The soothing and gentle action of the drug was merely a prelude to a violent disruption of cutaneous morphology and function. The public and physicians are not sufficiently informed about the actions of drugs.

Sensitization to Antibacterials

CASE W. D., is a white male, 48, a production worker and part-time bartender. The dermatologic history was without incident until two years ago. During the winter, a small fissure appeared near the nail of the right thumb. A plastic bandage was worn. Daily, the site was cleaned with an antiseptic. In about 10 days, irritation developed under the dressing. It was treated for three months with various remedies. Spreading developed over the thumb and back of the hand. The patient was under the care of a dermatologist for three months. Recurrences were the outcome in spite of treatment. Before the hand was well, anal irritation developed. He thought the hand trouble had been transferred to the rectal region. A hemorrhoidectomy was done in January, 1956. To prevent infection, a yellow ointment was used.

DETECTION OF OVERTREATMENT SENSITIZERS IN PRESCRIPTIONS

1. Onset and Flare-ups	Onset Oct. '55	Flare-up Early Nov. '55 Hosp. 10 Da.		Flare-up Late Nov. '55	Flare-up Jan. '56		Flare-up Feb. '56 Hosp. 10 Da.
2. Prescrip. Sequence	Oct. 24	Oct. 29	Nov. 14	Nov. 19	Jan. 4	Jan. 6	Re-Applied Prescription of Oct. 29
3. Prescrip. Ingredients	Min. Oil Zn. Oint.	Menthol Dist. H_2O Base	Min. Oil Zn. Ung.	Dist. H_2O Menthol Base	G-11 Dist. H_2O Base	Min. Oil Zn. Ox.	Menthol Dist. H_2O Base
4. Past-Treat. Patch Tests	Neg.	4-Plus	Neg.	4-Plus	4-Plus	Neg.	4-Plus

Fig. 3.

The discovery of overtreatment sensitizers in prescriptions is fascinating insofar as the "what did it" substance is concerned. The history gives important clues. The flare-up periods should be recorded and, if possible, approximate or even the exact dates obtained. After the acute manifestations of the dermatitis have begun to subside, usually a week or so, past-treatment patch tests are carried out. A diligent search must be made for all remedies applied because the offender might be found on the kitchen window sill. All reactions to the patch tests are then correlated with the flare-ups. There is now justification to get in touch with the druggist or physician, and find out the composition of the prescriptions. The climax of the search is now close at hand. The compositions of the prescriptions are checked against the record of positive reactions. In this case, all the prescriptions producing positive tests contained the same base. Not only is it necessary to be constantly suspicious of dermatologic drugs used on the skin, but this case is evidence that the means of putting drugs on the skin must also be kept under close surveillance.

PROPRIETARY ANTIHISTAMINE

A soothing lotion for the relief of itching due to light sunburn, insect bites, mild poison ivy and oak or other minor irritations.

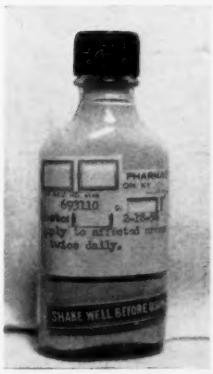
Apply locally three or four times daily.

Warning: Should not be applied to blistered, raw or oozing areas of the skin. If burning sensation results, use should be discontinued. Easily removed from sensitive skin surfaces by washing with water.

Shake well before using.

The public buying this proprietary is warned of potential danger. A point for confusion is that sunburn and the plant venenatas commonly blister and present oozing areas of skin. Laymen seldom show any discretion in their choice or use of remedies. Soothing hardly fits the pharmacology of the preparation. A dermatologic drug that has caused sensitization needs realistic labeling, and in need of consideration is the advisability of permitting public use of sensitizing drugs.

PRESCRIPTION ANTIHISTAMINE



693110

Case P.B. 2-18-56

Apply to affected areas twice daily.

Dr. Doe

Warning: None

Shake well before using.

This prescription was the same as the proprietary. The patient had no idea what it contained and had never heard of skin remedies breaking out the skin. What is more, he was sure, and his wife backed him up, that their doctor would not advise a drug that would hurt his skin. The evidence is overwhelming that dermatologic drugs are inadequately presented to physicians.

Fig. 4.
Lack of Warning on Prescriptions of Dermatologic Drugs.

Within 24 hours, a flaring dermatitis appeared with massing of vesicles on the face, hands, and feet. The right hand and thumb were covered with pea-sized bullae. Six weeks were needed for involution of the dermatitis. A normal skin was a short experience. The right thumb became irritated again. A plastic bandage was put on while tending bar. Several hours later, the thumb and dorsal surface of the hand were a weeping dermatitis (Fig. 2).

COMMENT: The patient never knew the cause of the dermatitis on the right hand so the recurrences were innocently induced. The label for the plastic bandages declared them to be medicated. The user was asked to make sure the medicated area contacted the moist wound surface. This made the medicine more effective. No warning was found on the container; but it did state that if the wrapper was broken or opened, sterility would not be guaranteed.

Promotional information reaching physicians on the antibacterials made no mention of possible sensitization. The drug afforded antibacterial protection without retarding healing. It prevented and controlled wound infection, and was first aid for abrasions, lacerations, surgery, burns, skin grafting, ulcers, and pyodermas. It would attack all pathogens for good measure. Proprietary and prescription sensitization is a double-edged therapeutic dermatitis.

Sensitization to Dermatologic Bases

CASE C. S., is a white housewife, aged 65, mother of four children. For two years, her husband had been a semi-invalid. She had had a thyroidectomy in 1936, and venous surgery on the right leg in 1948. There had been an attack of dermatitis on the feet in 1951. During October, 1955, a dermatitis appeared on the right lower leg. She could not recall the names of proprietaries that had been used. The appearance of swelling and weeping caused her to see a physician. The time of onset and flare-ups that caused two hospitalizations is presented in Fig. 3.

Sensitization to Antihistamines

CASE 1, P. B., is a 63 year old male who operates a bulldozer. He was seen in March, 1956, for several patches of dermatitis affecting the legs. The eruption had the clinical features of a nummular eczema. The patches were covered with a crust of dried serum admixed with a pink medicine. There was little change in the dermatitis during the next week. Three days later, or 10 days from the first visit, he developed a generalized dermatitis consisting of large areas of bright erythema throughout which were masses of vesicles with beginning pustulation. The initial patches on the legs dripped a clear serum. He was admitted to the hospital as an emergency case. Over a period of five days, the acute manifestation gradually subsided. All examinations and laboratory studies were normal. Past-treatment patch tests were done with the pink lotion and tincture of merthiolate. Because a powerful sensitizer was suspected, the tests were removed after eight hours. There was no reaction visible, but palpation revealed induration and some tender-

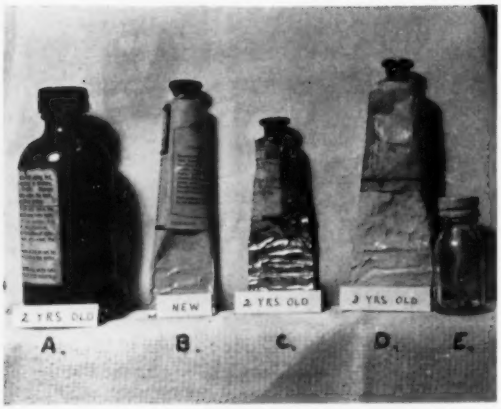


Fig. 5.
Lay-Therapists in Action.

The first thought the patient had about the irritation was an inkling that it might be poison ivy. In the medicine chest was found remedy A which had been used two years previously for a rash that looked just like the present one. It was applied for several days to stop the itching. When there was no improvement, the dermatitis was thought to be a fungus. Tube B was purchased to cure it. Three days of applications were without results. Something better was needed. The medicine chest was searched. A partially-used tube (C) was found. It had been recommended by a physician three years previously for a rash affecting one of the children. Several days of treatment produced no improvement, so another tube (D) was tried. Within a matter of hours, vesicles, edema, and weeping developed. A friend brought over some capsules (E) to help subdue the violent itching. Changing diagnoses and treatments pretty well characterize the lay person's attitude about the management of dermatologic disorders. The patient was sure that the initial rash was poison ivy. When it did not respond, she was sure it was a fungus infection. Past-treatment patch tests were performed. The poison ivy lotion produced a two-plus reaction which disappeared in 48 hours. The fungicidal ointment and a prescription produced negative reactions, but the antihistamine preparation showed erythema, edema, and vesicles with rather severe itching. The antihistamine cream reaction persisted for over a week. She then recalled that after using the poison ivy lotion, she had tried tube D for a day or so to help relieve itching.

ness at the site of the pink lotion. Twelve hours later, erythema appeared, and after 24 hours, vesicles and flaring developed—a miniature duplication of the generalized dermatitis. He was in the hospital five days and lost three weeks of work. When drugs are seen on the skin, it is important to watch for signs of spreading and bring these possibilities to the attention of the patient. This patient was seen at the onset of the sensitization period.

The proprietary of the antihistamines had a warning on the label. The prescription had none. Physicians do not sufficiently warn patients concerning the sensitizing properties of dermatologic drugs (Fig. 4).

CASE 2, R. M., a 34 year old white housewife, the mother of three children, was seen for a vesicular, crusted dermatitis affecting the left forearm and arm, and to a less extent the face and neck. The onset was associated with a small red spot which appeared two weeks previously. The medications the irritation received are portrayed in Fig. 5.

COMMENT: The label on the antihistamine cream stated it was to be applied generously three to four times daily. There was a warning that prolonged use was inadvisable, and that it should not be applied to extensive areas of the body. This warning is vague. People do not know what is meant by prolonged use and, in addition, to one person an extensive area might be the foot, and to another it might be both lower extremities. The label claimed that it was for the relief of itching. When it produced sensitization, severe itching developed. The overtreatment reaction in this patient epitomizes all the evils of lay diagnosis and therapy. The remedies are available, but information about them and skill to use them are lacking.

Sensitization to Antiseptics

CASE M. S., is a white housewife, aged 40, who had had pruritus vulvae for one year. The onset appeared after an attack of poison ivy that spread and became much worse from using a pink cream. As the attack subsided, the irritation of the vulva persisted. Several physicians had been consulted. Along with their recommendations, she carried out self-treatments. Two weeks previously she had read about a marvelous new antiseptic (Fig. 6). Believing she had an infection, a bottle of it was purchased. The solution caused considerable burning. It was also used as a douche. Gradually, a redness developed over the thighs, spread to the abdomen, and quite suddenly an overwhelming generalized itching occurred. Past-treatment patch tests disclosed a reaction to the antiseptic which in miniature reproduced the acute dermatitis. Only two tests were done because the other medicine used had been mislaid.

Sensitization to Organomercurials

CASE W. G., a white male aged 53, a baker by trade, experienced an acute weeping dermatitis of both hands, palmar and dorsal surfaces. Spreading over the forearms and the appearance of a rash on the face aroused great apprehension. The onset was two months ago. A few fissures were noticed on the left ring finger. A number of home treatments were tried, with gradual worsening and spreading over the left hand. The rash now unquestionably was a bad fungus infection so a mercurial antiseptic was painted on. The erythema brightened and the symptoms intensified. He purchased a proprietary fungicide. This would combat fungal infections on the surface and also under the surface of the skin. It was to be applied night and morning and used for a week

PROPRIETARY APPEALS

Get rid of Athletes Foot and block its return!

GERMICIDE · FUNGICIDE · DEODORIZER

(Patent Pending)

COMBATS INFECTION
RELIEVES PAIN and ITCHING

A Fresh, Clean Odor

Gentle Yet Powerful
Reliable for Children and Adults

KILLS GERMS ON CONTACT

SKIN IRRITATIONS*: For itching and discomfort of heat rash, insect bites, chiggers, poison ivy — oak, nettles, hives, dandruff, chafed and chapped skin.

FIRST AID*: For burns, sunburn, cuts, scratches, abrasions.

ATHLETE'S FOOT—SORE, TIRED FEET: Apply daily. Keep feet dry between applications.

The Family Antiseptic

PRESCRIPTION APPEALS

Doe's Pharmacy

No. 582175 Mrs. Doe

Apply three times daily to affected areas.

John Doe, M.D.

Fig. 6.

Inducements to Use Proprietaries Compared to Prescription Drugs.

Claims to the public for proprietary skin remedies compete with and overshadow the advice of physicians. If the skin disease being treated does not respond at once (patients are unaware of the importance of sufficient healing time) they all too often, and commonly unknown to the physician, begin to try proprietaries. The enticement is overwhelming and the coaxing of relatives and friends is hard to withstand. The antiseptic used by this patient was wild with claims. Prescription drugs are completely lacking the glamour of counter proprietaries.

after the fungus was cured. Using the preparation caused the left hand to swell and forthwith the right hand erupted. Past-treatment patch tests disclosed a marked sensitivity to mercuric chloride 0.1% and two organomercurials. The etiology of the hand dermatitis was cinnamon, and avoiding it led to a prompt recovery.

COMMENT: This is an example of the folly of expecting people to be able to treat a dermatitis. A contact dermatitis due to cinnamon was painted with an antiseptic, and then daubed with a fungicide containing an organomercurial. A spreading mercurial sensitization deprived him of work for one month. The label on the first organomercurial stated that it was a general antiseptic for first-aid; the area should be washed with soap and water before application. It would not irritate, burn or injure tissue. The second organomercurial advised that it should be applied freely night and morning, and applications should be continued one week after symptoms had disappeared. On broken skin, it may cause temporary smarting, and it should be kept out of the eyes. Neither label disclosed any warning or caution for the user.

Sensitization to Local Anesthetics

CASE D. K., is a 28 year old white housewife, who was seen for a highly pruritic, weeping and crusting dermatitis affecting the flexor surfaces of the forearms, sides and front of the neck, and to a less extent the waist area. This attack had developed during a period of two weeks. The past dermatologic history disclosed an attack of dermatitis on the right arm in the winter of 1946. This disappeared in the late spring, and was thought to be due to wool. There was another attack in the summer of 1955 which was limited to the abdomen and breasts, and was thought to be due to an undergarment. A physician advised the use of a pink lotion, and this attack of dermatitis persisted about two weeks. Early in the fall of 1955, there was a slight recurrence on the thighs, and this was treated with the same bottle of lotion. The recurrence experienced two weeks ago was also treated with the same bottle of lotion; but this time instead of producing relief and improvement, it caused a sudden flare-up and a marked exacerbation of symptoms and signs. A past-treatment patch test with the lotion produced a weeping, eczematous response with flaring. It was then determined that it contained one of the local anesthetics.

COMMENT: This is an example of the way in which patients will save skin remedies and use them for additional attacks of dermatitis, either on themselves or other members of the family.

The previous use of the drug had satisfied the incubation period requirements for "caine" compounds. When it was used for the last attack of dermatitis, it produced an exacerbation typical of sensitization.

Incidence of Overtreatment Dermatitis

IT IS A DAILY event to see patients carrying so much medicine that they are confused about when to take it. Pill boxes are in vogue again, and some patients like to point out their various medicines and recite what each will do. Prescribing has reached the place where the side effects from one drug are to be offset by using another, and, perhaps, it will soon be popular to administer a third to do away with the bad effects of the first two. It appears today to be unpopular to believe that the human body has any defensive or healing attributes. A few remarkable so-called "wonder drugs" have fostered a tolerance and acceptance of many unremarkable ones.

Overtreatment is the use of too much medicine for any disease or its symptoms, and its extent is reflected by the difficulty in finding the etiology in drug eruptions. Often so many remedies are mixed in the system that it takes weeks of eliminative study to detect the guilty one. Finding the drug inducing a blood dyscrasia is sometimes impossible because so many were taken. Common aftermaths are toxic sequelae which may not be recognized for a long time. Some risk is permissible in those diseases with a serious prognosis, but drug toxicity in self-limited disorders is another matter. Overtreatment is going to be challenged by the incidence of minor, severe, or fatal drug reactions in trivial human ailments.

At a forum in 1939 on "Overtreatment in Dermatology," Miller *et al* stated: "A comparatively large number of patients in dermatologic practice are forced to seek treatment because of irritation from remedies applied and not due to their primary complaints." Cutaneous medicine has always carried a heavy burden of things to do and compositions to apply, but this is the first time that dermatologic therapies had begun to produce a significant number of drug reactions. In 1938 manufacturers were straining to produce enough sulfonamides. These were urged for cutaneous application and are still in use for dandruff; however, the early enthusiasm soon turned to dismay. Next, penicillin came into use, and the topical sulfonamides were cast aside in ratio to the availability of topical antibiotics. Again, the first results proved misleading. All along, there was a wide use of the organomercurials for the prevention and treatment of skin infections. Topical anesthetics ("caine compounds") and antihistamines have had a therapeutic history on the skin like the sulfonamides, antibiotics, and organomercurials. Overtreatment in dermatology furnished the precedent for introducing new drugs whose true pharmacology was determined by the incidence of side effects.

In 1953 the late C. Guy Lane determined from a group of dermatologists how many cases of overtreatment dermatitis they encountered in one month, and the average number reported was 12. This approximates 140 cases per year, which, when multiplied by the number of practicing dermatologists, led Lane to conclude that at least 150,000 cases occurred annually. Pillsbury believed that a figure of one million cases annually would be quite conservative. For a number of years the author has seen an average of 20 proved cases a month. Contact dermatitis is overtreated in at least 35%, and often 50%, of the patients.

During the first quarter of 1955, an additional study was made of the incidence of overtreatment dermatitis. It was found to be 13%; and if drug eruptions from oral and parenteral administration were included, the figure reached 17%. The diagnosis of overtreatment dermatitis was confirmed by means of past-treatment patch tests. Distribution in old cases compared to new cases confirmed a suspicion that once a therapeutic sensitization occurs, repeated episodes of dermatitis are common. In Table I is shown the ratio of drug dermatoses to other skin diseases during the first quarter of 1955.

TABLE I.
RATIO OF DRUG DERMATOSES TO OTHER SKIN DISEASES, FIRST QUARTER, 1955

Grand Total Drug Reactions	Acne Vulgaris	Hand Eczema	Atopic Dermatitis	Tinea Capitis
73	44	39	38	20

These figures arouse contemplation. Do they represent normal or average expectancies? Drugs are potent agents and produce good as well as bad effects. What shifting of the ratio is critical? If the incidence of accidents from the tools of our skill are compared to accident rates in factories, a stunning difference would be seen. Safety knowledge in industry may be compared to the tempo of drug advertising in our profession. Seven patients in this series had to be hospitalized, which is clear evidence that cutaneous reactions from medicines are far from trivial.

Summary

LABELING and promotional information on dermatologic drugs does not disclose the extent of the pharmacologic actions. The incidence of overtreatment dermatitis results not from any one, but many remedies. Consideration should be given to the elimination from proprietaries of all proved therapeutic sensitizers. Literature reaching physicians needs to be more realistic, with adequate emphasis on the unfavorable actions. Once a drug has produced a characteristic sensi-

tization pattern, and its sensitizing potential has been proved, it is likely that, with continued use, it will behave in a similar manner again. It might be advisable for prescriptions proved to contain sensitizers to have adequate warnings in prominent lettering. The importance of destroying used skin remedies needs emphasis.

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"What They Can Do"

The guest editorial in the June, 1956, issue of *Performance* was written by Mr. Harlow H. Curtice, President of General Motors Corporation. We quote as follows: "When people come to us for jobs, we in General Motors are interested mainly in what they can do, and much less in what they cannot do. The fact is, of course, that all of us are handicapped for some jobs. I know an outstanding scientist who would make a poor accounting clerk—his wife has to keep his checkbook straight for him. The so-called 'normal' man does not exist. Each of us has his individual disabilities. But whatever these may be, each man has a 'potential'—some spot where he will do as well as, or in some cases better than, anybody else. Anyone who can do a job satisfactorily is not handicapped insofar as that job is concerned. In General Motors we rely greatly on pre-employment medical examination to tell us what kind of peg a man is and where he might best fit. Our plant physicians classify job applicants into five groups: (1) unlimited, suitable for any department; (2) limited, suitable for certain types of work only; (3) special, requiring a special kind of work and not to be transferred to any other without medical okay; (4) temporarily unable to work, requiring remedial medical attention; (5) not suited for the types of work available. Naturally, in any industrial operation a basic force made up of people in the first category is essential for the sake of flexibility. People are needed who can be moved from one job to another as requirements dictate. But this leaves ample room for those with skills who are limited to a certain type of work because of a physical deficiency. Handicapped people are not helped by, nor do most of them expect, special privileges. What they are looking for, we find, is an opportunity to demonstrate their will and skill to stand on their own. Hundreds of such people are at work in General Motors plants and offices. Their performance is on a par with that of other employees, and in some cases it is outstanding. That is what counts. These people are proving every day that physical handicaps are not necessarily a bar to leading useful and productive lives."

—From *Pennsylvania Medical Journal*, August, 1956.

Asthmatic Syndrome Following Exposure to Tolylene Diisocyanate

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IN THE last five years a mixture of the 2,4 and 2,6 diisocyanates of toluene has been used in rapidly increasing volume by the synthetic rubber industry in the United States. Isocyanates in general are extraordinarily reactive chemicals which combine readily with amines, water, alcohols, carboxylic acids, and in general with any compounds having reactive hydrogen groups. The polyurethanes and polyureas formed when diisocyanates react with certain resins are high molecular weight polymers which have practical physical properties. Therefore, the isocyanates have wide application in the synthesis of lacquers, fibers, plastics, and particularly foams of varying degrees of rigidity and elasticity.

Tolylene diisocyanate, one of the several isocyanates used in industry, is a highly volatile, straw-colored liquid with a distinctive odor and the capacity in adequate air concentration to cause subjective burning and smarting of the eyes and nasal mucous membranes. In Europe, where this substance was first widely used, and now in the United States there have been encountered many cases of exposure to the fumes of tolylene diisocyanate resulting in a characteristic asthmatic syndrome, to date not adequately reported in this country.

The manufacturers of tolylene diisocyanate have provided their customers with certain experimental work in the toxicology of this substance in laboratory animals. Zapp,[1] at the Haskell Laboratory of E. I. du Pont de Nemours and Company, and Wheeler,[2] of the Mobay Chemical Company, have provided experimental data which indicate that, when tolylene diisocyanate is ingested or injected, the acute toxicity in experimental animals is not great. In animals killed by oral ingestion of the chemical, pathological examination revealed injury to the gastrointestinal tract and liver of unspecified type. When applied to the skin this material caused local skin reactions, and in addition it was possible to produce allergic skin sensitization in guinea pigs. In various experimental situations where animals were exposed to the vapors of tolylene diisocyanate, it behaves as a powerful irritant of the conjunctiva and particularly the respiratory mucosa, with acute bronchitis occurring in experimental animals from air concentrations as low as one to two parts per million.

Microscopic evidence of tracheobronchitis was demonstrated whenever adequate exposure was effected, and in addition with larger doses certain degrees of bronchopneumonia and pulmonary edema could be produced.

Since 1950 there have appeared in the European literature[3,4,5] reports of human intoxication by tolylene diisocyanate. All three of these reports describe acute tracheobronchitis with bronchospasm and asthma-like syndromes produced by the inhalation of the fumes of tolylene diisocyanate, and several also imply that there is an allergic type reaction to this substance. It has not yet been reported whether prolonged exposure to diisocyanate fumes in industrial concentrations produces any damage to the lungs, liver, hemopoietic organs, kidneys, or other systems in human beings. This paper presents such a study and reports experience with eight cases of pulmonary symptoms following exposure to this chemical.

Case Reports

FOR TWO years, while a new process for the manufacture of polyurethane foams was being introduced into a synthetic foam factory, all workers who came in contact with tolylene diisocyanate and even those who handled the finished foam were kept under the close supervision of the plant's industrial physician. Some 25 men, exposed for various lengths of time, ranging from a few weeks to almost two years, were under constant observation. Within this experience there were encountered eight cases of bronchopulmonary symptoms thought to be due to inhalation of tolylene diisocyanate. These cases ranged from very mild attacks of cough and tightness in the chest when the employee was exposed to heavy concentrations of diisocyanate vapor, to incapacitating asthma whenever the employee was exposed to the slightest odor of the substance. Three cases will be presented to illustrate the spectrum of cases encountered, since they demonstrate well the fact that individual susceptibility seems to have a determining influence on whether any given person has important difficulty.

CASE NO. 1 was 19 years old when he started work in the polyurethane division October 25, 1954. He is still employed on the fabricating machine, exposed to the highest concentrations of tolylene diisocyanate that any employees have experienced. This boy has a negative past history as far as allergic disorders are concerned. In January, 1955, over the course of three or four days, there was an unusual amount of accidental spillage of diisocyanate in the pouring room, and this employee sustained a maximum exposure to the substance. He admitted that the vapors in such concentration did cause severe coughing, tightness in the chest, without wheezing or dyspnea. It was thought, on auscultation of the chest, that there was a coarsening of the breath sounds without actual wheezes, rales, or rhonchi. A white blood count obtained on the third day of heavy exposure was 9,500, with 66% polymorphonuclear leucocytes, 2% lymphocytes, 8% eosinophils, 0% basophils and 4% monocytes. Urinalysis, liver function tests, and reticulocyte count done the same time were all normal. Subsequent to this experience this employee has been able to work continuously in the pouring room, not bothered by ordinary concentrations of the diisocyanate in his inspired air. His eosinophils have been normal before and since this count, except that on his last white count, November 21, 1955, he again had 8% eosinophilia in a 9,450 white count. His chest films were normal at the onset and termination of the study.

This man is presented as an example of a mild allergic type reaction to the inhalation of high concentrations of tolylene diisocyanate, but also the ability to tolerate ordinary production levels of diisocyanate without any difficulty over the course of many months. This type of reaction was so mild and so common among those who work with this substance that this man is not considered one of our eight cases of intoxication.

CASE NO. 2 was 27 years old when he went to work in the polyurethane division on June 21, 1954. He had no past history of allergic disorders nor chronic pulmonary disease. He had had psoriasis for three years on the elbows, left knee, and knuckles of both hands. By August 19, 1954, he was beginning to notice cough and bronchial irritation when exposed to heavy air concentrations of diisocyanate. In January, 1955, when large amounts of tolylene diisocyanate were spilled in the pouring room, he was working in an adjacent room cutting up the finished blocks of polyurethane foam. Some of the fumes were blown into his room, although obviously in much less concentration than the fumes to which the previous worker was subjected. Yet this employee got very tight in the chest with wheezing, non-productive cough and dyspnea which lasted all the following night. When examined the next morning his throat was reddened, and the chest on auscultation was full of course rhonchi and a few inspiratory and expiratory wheezes. He was placed on a bronchodilator consisting of ephedrine, amytal, and aminophylline in combination, and was observed over the course of a week. During the whole week he exhibited inspiratory and expiratory squeaks and rhonchi, even though a chest film was entirely normal. White blood count done shortly after the onset of symptoms, was 8,950, with 44% polymorphonuclear leucocytes, 37% lymphocytes, 13% eosinophils, 0% basophils, and 6% monocytes. Because of this symptomatology and obvious inability to tolerate even the moderate inhalation of diisocyanate, this employee was transferred from this division to another part of the factory. When he was finally examined on August 4, 1955, he gave the history that when he visited in the polyurethane division in order to talk to his old friends there, he would begin to feel his chest tighten up and begin to wheeze, even when he was exposed to the minimal concentrations that ever existed in this department. He has subsequently developed a contact dermatitis from the chemicals to which he is exposed in the foam rubber department. Except for the eosinophilia demonstrated at the height of his allergic reaction, his urinalyses, liver function tests, and blood counts have all been normal. His chest film was normal at the time of maximum symptoms, and it was normal at his final check in August, 1955.

This man is presented as a typical case of acquired allergy to tolylene diisocyanate, demonstrated by the fact that he tolerated ordinary exposure to this substance over the course of a few months and then became so allergic to it that the smallest possible concentration in the inspired air would then cause bronchospastic symptoms. The allergic nature of his reaction is further documented by his high eosinophil count at the height of his allergic reaction. The fact that this patient is an atopic individual is evidenced by his ability to develop a contact dermatitis at a later date, even though his past history for allergic disease was negative at the time he was employed.

CASE NO. 3 was 38 years old when he began working on August 9, 1954, in the cutting room where he participated in cutting up the loaves of finished polyurethane foam. Ordinarily, he did not work in the pouring room at all, but when he had occasion to enter this room for even the shortest period of time, he would get very wheezy and start to cough. He was observed to begin coughing and choking up even when exposed to the fumes of fresh loaves of polyurethane. Past history was negative for clear cut asthma, hay fever or eczema. However, he had frequently had

hives after ingesting tomatoes and strawberries, and also he admitted that, in the past, heavy exposure to dust would make him choke up, cough, and wheeze. On physical examination this man demonstrated basal wheezes and rhonchi in both lung fields, and he still had an indolent dermatitis on the hands from a contact dermatitis which he had acquired in the foam rubber department. Urinalysis was normal, but white blood count was 6,800, with 44% polymorphonuclear leucocytes, 48% lymphocytes, and 8% eosinophils. A film of the chest showed marked emphysema for this age with low, flat diaphragms, and scattered fibrotic streaks throughout both lung fields. It was advised that this worker not be employed in this division because of his known chronic pulmonary disease and immediate reaction to the fumes of tolylene diisocyanate.

This employee is presented as an example of an atopic individual with a past history of chronic pulmonary disease undoubtedly due to allergy in part, who should never be exposed to tolylene diisocyanate at all, because he can be expected to demonstrate a marked sensitivity reaction extremely early after exposure to this compound.

The last two cases presented are representative of all cases of intoxication seen. No intoxication involving the skin, eyes, or any other part of the body has been noted. Symptoms have been restricted to the bronchopulmonary system.

Comment

IN ORDER to detect any unsuspected ill effects from exposure to industrial concentrations of tolylene diisocyanate, all workers exposed to this substance during the first 18 months after it was introduced into the factory were carefully examined periodically by the factory physician. In addition, six workers, who were considered to have had as heavy exposure as anybody, have been followed over the course of at least a year with the following battery of tests, at least at the onset of employment and at the termination of the study and in most cases periodically during the study: (1) A history with a discussion of allergic reactions, pulmonary symptoms, skin reactions and blood dyscrasias particularly. (2) Physical examination. (3) Chest film. (4) Complete blood count, urinalysis, cephalin flocculation test, icteric index, bromsulphthalein retention test, and in certain isolated incidences reticulocyte counts.

All workers carefully followed remained in excellent health without significant changes in blood pressure or physical examination. One employee demonstrated a moderate pyuria on one examination which was not confirmed on subsequent examinations. Another employee demonstrated microscopic hematuria on one occasion, while he was suffering from an acute infectious bronchitis. This same urine specimen showed a 1+ albumen reaction, but six months later all urinalyses in this subject were entirely normal. No subjects developed anemia. Moderate eosinophilia was observed rather frequently in those subjects exposed to high concentrations of diisocyanate, particularly in those who demonstrated allergic asthmatic reactions. Abnormal liver function tests were only obtained once in one individual who was simultaneously suffering from an attack of gastritis demonstrated by x-ray. Twelve days after the abnormal tests this individual showed a normal bromsulphthalein retention test, cephalin flocculation test, serum bilirubin, alkaline phosphatase, total protein, albumen-globulin ratio, and prothrombin time. The single isolated abnormal bromsulphthalein retention test recorded in this patient is therefore considered either a laboratory error or an unexplained temporary abnormality of liver function.

Chest films taken on all subjects at the onset and termination of the study showed no change. In several individuals who had asthmatic symptoms chest films taken at the height of symptoms revealed no abnormality. Thus, from the laboratory point of view, no cumulative damage to lungs, hemopoietic system, blood, liver, or kidneys was demonstrated.

From hearsay and from reports of cases of intoxication in the German,[5] French,[3] and English[4] literature it was known at the onset of this particular study that tolylene diisocyanate was capable of acting as a primary irritant in the upper respiratory tract, trachea, bronchial tree, and lungs. It was also known from these same reports that it was probably an allergenic substance, in that these foreign workers reported acquired sensitivity to this substance in the form of asthma. It was not known whether the substance had any other biological effect in human beings.

When tolylene diisocyanate is exposed to extracellular fluid, no one knows what are the products of the reactions that take place. Certainly all sorts of chemical reactions do take place, including the formation of the diamines of toluene, many polymers, and even many unknown chemical compounds resulting when tolylene diisocyanate combines with the amino groups of protein and other organic compounds normally found in the body fluids. Tolylene diamine is an extremely poisonous substance, which has been used experimentally for decades to produce jaundice and intravascular hemolysis in experimental animals. It is obvious, particularly when normal reticulocyte counts were obtained immediately after unusually severe exposure, that at least with the plasma concentrations resulting from inhaling the fumes in the air, no measurable hemolysis takes place, and within the scope and the time limit of this study no measurable damage to the liver.

The possible reason why there is no important damage detected in those organs apart from the respiratory surface is the fact that tolylene diisocyanate is so reactive in body fluids that it probably polymerizes and combines with proteins and other substances to form large molecular weight compounds that are relatively non-toxic. This is merely conjecture and has no chemical or physiological proof.

How such a reactive and simple chemical compound can be allergenic can be explained by the possibility that it behaves like a haptene, combining with protein to form antigens in much the same way as heavy metals and other haptenes function as allergens. Sensitivity studies should be done with this material, including skin testing in workers exposed to the substance.

It seems apparent from this study and from the clinical experience of observing workers exposed to this material that in the future this chemical compound will be no problem as far as skin irritation or skin sensitivity is concerned, and no problem as far as delayed or remote toxicity is concerned in the liver, kidneys, hemopoietic system, or any other part of the body except the tracheobronchial tree. It has already been and will always be a problem in industry as a primary respiratory irritant and an allergenic substance capable of producing acquired asthma.

Summary

1. THIS REPORT includes a toxicological study of workers exposed to 2,4 and 2,6 - tolylene diisocyanate during the 18 months, June, 1954, to December, 1955, when this substance was first used in the manufacture of polyurethane foams in the factory concerned.

2. Tolylene diisocyanate is a toxicological problem only in that it is (a) a primary irritant of the conjunctiva, nose, pharynx, trachea, and bronchial tree, and (b) an allergenic substance capable of producing human sensitivity with resulting asthma and broncho-spasm when the sensitive individual is exposed to the minutest quantities of the substance.

3. No detectable immediate or delayed damage to the integument, liver, hemopoietic system, or kidneys was discovered in any worker. No radiologically detectable damage was demonstrated in the chest films taken at the beginning and at the end of the study, even in those workers who demonstrated the severe forms of intoxication with asthmatic symptoms.

4. Eight cases of intoxication by tolylene diisocyanate have been encountered in this study, and three are described in detail in this report.

5. Recommendations are made: (a) that appropriate air exhaust systems be installed wherever tolylene diisocyanate is used, sufficient to keep the air concentration below that which subjectively causes burning of the eyes and nose; (b) that all applicants to be employed in areas of exposure be screened to eliminate atopic individuals and those who have a history of chronic respiratory illness; (c) that it is unnecessary to check workers exposed to tolylene diisocyanate for any deleterious effects outside the respiratory tree; (d) that as soon as any worker develops an asthmatic reaction to tolylene diisocyanate, he be removed permanently from any further exposure to this substance.

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Practically Every Patient

THERE WAS a time when the term industry meant mining, milling, and other activities involving heavy, hazardous machinery. There was also a time when industrial medicine meant only the surgical care of the traumatized workers. In some quarters that opinion still persists. Indeed, most doctors feel they are not identified with industrial medicine, or what should be more appropriately termed occupational medicine. They manifest disinterest because they are not practicing in a highly industrialized community or on the payroll of industry. Such an attitude is excusable only in the pediatrician. Actually, practically every patient of practically every doctor is engaged in some type of occupation. This being so, the obligation actively to participate in the occupational health program should be apparent.

—From "Emotional Ill-Health in Industrial Society," by RUTHERFORD T. JOHNSTONE, M.D., in *Rocky Mountain Medical Journal*, September, 1956.

Principles of Medical Ethics

MILTON R. WEED, on the Editor's Page, *Detroit Medical News*, October 15, 1956, has the following comment on the proposed revision of the Principles of Medical Ethics of the American Medical Association. Reproduced beneath is the proposed revision, showing Section 7 in italics. This emphasis is ours.—Editor.

"LAST JUNE in Chicago the A.M.A. House of Delegates approved a reference committee report on this revision but deferred final action until the clinical session next month in Seattle to 'permit ample opportunity for discussion . . . .' The purpose of this editorial is to encourage such discussion so that our delegates may benefit from the experience and wisdom of our members.

"The present Principles have never been completely satisfactory. Based on Sir Thomas Percival's 92 rules for guidance of physicians at the Manchester Infirmary published in 1803, they are a patchwork of amendments and revisions. They are long (about 2500 words), occasionally repetitious, deal with professional etiquette as much as with ethics and even with economics (example: ownership of a drug store). And they are, as Dr. Buie, chairman of the A.M.A. Council on Constitution and Bylaws, said, 'encumbered by verbosity and qualifying constructions of dubious value which . . . . engender confusion.'

"It seems to us that a code of ethics should contain broad, basic principles which can be used as touchstones for conduct—like the Golden Rule or the Ten Commandments. Detailed specificity is necessary in law, but codification always deflects attention from the spirit to the letter. Moral principles necessary for the highest good of patient and community involve no quibbling with words; the spirit is all important.

"The authors of the proposed revision in our opinion have been remarkably successful in delineating the fundamental principles of medical ethics according to this concept. What's more, in about 400 words they have included every basic ethical concept found in the present Principles.

"The anticipated criticism that they are not sufficiently specific or detailed has been met by the Committee's recommendation that they be supplemented with a codification of opinions and interpretations of the A.M.A. Judicial Council. Such a codification is now in progress."

Proposed Revision

THESE principles are intended to serve physicians, individually or collectively, as a guide to ethical conduct. They are not laws; rather, they are standards by which a physician may determine the propriety of his own conduct. They are intended to aid physicians in their relationships with patients, with colleagues, with members of allied professions and with the public, to maintain under God, as they have through the ages, the highest standards.

Section 1. The prime objective of the medical profession is to render service to humanity with full respect for both the dignity of man and the rights of patients. Physicians must merit the confidence of those entrusted to their care, rendering to each a full measure of service and devotion.

Section 2. Physicians should strive to improve medical knowledge and skill, and should make available the benefits of their professional attainments.

Section 3. A physician should not base his practice on an exclusive dogma or a sectarian system, nor should he associate voluntarily with those who indulge in such practices.

Section 4. The medical profession must be safeguarded against members deficient in moral character and professional competence. Physicians should observe all laws, uphold the dignity and honor of the profession and accept its self-imposed disciplines. They should expose, without hesitation, illegal or unethical conduct of fellow members of the profession.

Section 5. Except in emergencies, a physician may choose whom he will serve. Having undertaken the care of a patient, the physician may not neglect him. Unless he has been discharged, he may discontinue his services only after having given adequate notice. He should not solicit patients.

Section 6. A physician should not dispose of his services under terms or conditions which will interfere with or impair the free and complete exercise of his independent medical judgment and skill or cause deterioration of the quality of medical care.

SECTION 7. *In the practice of medicine a physician should limit the source of his professional income to medical services actually rendered by him to his patient.*

Section 8. A physician should seek consultation in doubtful or difficult cases, upon request or when it appears that the quality of medical service may be enhanced thereby.

Section 9. Confidences entrusted to physicians or deficiencies observed in the disposition or character of patients, during the course of medical attendance, should not be revealed except as required by law or unless it becomes necessary in order to protect the health and welfare of the individual or the community.

Section 10. The responsibilities of the physician extend not only to the individual but also to society and demand his cooperation and participation in activities which have as their objective the improvement of the health and welfare of the individual and the community.

Shortening the Disability Period in Acute Periarticular Disorders

HERMAN H. TILLIS, M.D.
Chief, Arthritis Clinic, Newark Presbyterian Hospital
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ONE OF THE frequent causes of lost time in industry is acute periarticular inflammation and pain that may arise either from trauma — i.e., immediately after a period of physical strain or unaccustomed posture — or from non-traumatic causes that remain generally unknown. These disorders, usually diagnosed as bursitis, myositis, fibrositis, and tenosynovitis, owe their significance not only to their frequency but also to the fact that occasionally they become the source of protracted controversy regarding their compensability.

This kind of difficulty is most often encountered when the initial treatment produces results that are indifferent, and is rare when treatment can be relied on to be effective.

In the disorders under consideration, adrenocortical steroid therapy is generally beneficial,[1] yet one is properly reluctant to administer an agent capable of exerting undesirable systemic effects. No agent has been employed more widely than salicylate for its analgesic and anti-inflammatory effects in the various rheumatic disorders, but the irritant action of salicylate on the gastric mucosa frequently prevents its full employment. Furthermore, salicylate is not nearly as rapid as glucocorticoid in remitting rheumatic symptoms.

The need for effective and safe anti-inflammatory therapy in these conditions might be met by using large doses of a properly buffered salicylate and carefully selected doses of a glucocorticoid in which there is enhanced anti-inflammatory effect but diminished influence on mineral metabolism. Bufferin® and Sterane® admirably fulfill these criteria.

Sterane is a glucocorticoid (prednisolone) the structure of which is similar to hydrocortisone, but with four times the glucocorticoid effect of hydrocortisone and with negligible electrocorticoid effect in therapeutic doses.[2-4] Bufferin, a combination of aspirin, aluminum glycinate and magnesium carbonate, has satisfactorily eliminated the disturbing side effect of gastric intolerance to aspirin.[5-7]

More than a hundred patients suffering from periarticular inflammation and pain, in many instances resulting directly from their employment, have now been given short-term therapy with Bufferin and Sterane. The course of treatment consisted of an initial daily dose of 3 to 5 gm. of Bufferin and 15 mg. of Sterane administered in divided doses. Dosage with Bufferin was held constant as long as therapy was necessary, while the amount of Sterane was reduced by 2.5 mg. decrements each day until discontinued. In order to maintain flexibility of dosage, it is important that these agents be administered in separate tablets (although both may be given at the same time). Therapy usually was terminated within four or five days, but occasionally was continued for periods up to one month, with the full amount of Bufferin plus 5 mg. of Sterane daily.

	Total	Good	Fair	Poor
Bursitis	39	37	0	2
Myositis	38	24	3	11
Fibrositis	11	9	2	0
Tenosynovitis	5	5	0	0
Backstrain	10	5	0	5
	103	80	5	18

Several case histories representative of results achieved with this combination are presented.

H. A.: a 33-year-old male, weighing 260 pounds —now a plant superintendent—was first seen in May, 1953, with a history of recurring attacks of low back pain which sometimes radiated to either leg. These attacks occurred without apparent cause and each resulted in a severe and prolonged period of disability; the attack bringing him in at this time was not relieved for over a month using conservative treatment. In August, 1955, he suffered a similar attack after bending slightly. He was given 15 mg. of Sterane daily in divided doses, together with 1 gm. of Bufferin every four hours. The condition cleared completely within 48 hours, although previous attacks had without exception lasted several times as long regardless of treatment.

The Bufferin® used in this study was supplied by the Medical Department, Bristol-Myers Products Division, New York City; the Sterane® by the Medical Department, Pfizer Laboratories, Brooklyn, New York.

A.A.: a 25-year-old housewife and part-time sales clerk, was seen in December, 1955, with a painful right shoulder. The pain had occurred suddenly two weeks before and had been unresponsive to phenylbutazone and to codeine. A diagnosis of acute non-calcified bursitis was made, and the patient was given 12.5 mg. of Sterane daily together with 0.6 gm. of Bufferin every four hours. The condition cleared completely within 48 hours.

A.L.: This man, a 44-year old attorney, was first seen on May 9, 1956, complaining of severe pain in the left arm, of sudden onset. Fluoroscopy revealed a large calcific deposit in the left subacromial bursa with typical pain on rotation and motion. The patient was given 15 mg. of Sterane daily together with 1 gm. of Bufferin every four hours. This therapy provided rapid reduction in symptoms so that the patient was able to return to business on May 13, 1956, and was completely syndrome-free by May 18, 1956.

T.R.: A 50-year female office clerk, was first seen following a "frozen left shoulder" of three months' duration. She had been unable to raise her left arm for filing and for many other office duties. Because of an old healed pulmonary tuberculosis the dangers of steroid therapy were discussed with her, but on account of the severity of her disability she was willing to submit to the therapy. She was given 12.5 mg. of Sterane daily and 1 gm. of Bufferin every four hours. Complete relief of pain occurred after three days of therapy, but restriction of motion persisted. Sterane was stopped at this time and the patient was continued on Bufferin, and was given therapeutic exercises. Restriction of motion rapidly disappeared, and at the end of two weeks she was able to return to full office duty.

I.O.: This man, a 48-year old plumber, was in severe distress when first seen, complaining of acute pain in the right upper arm of sudden onset. A diagnosis of acute bursitis (subdeltoid) non-calcific was made, and the patient was given 15 mg. of Sterane daily together with 1 gm. of Bufferin every four hours. Complete relief of pain and disability was obtained after three days of therapy, and the patient was able to return to full duty as a plumber on the fourth day.

G.L.: This patient, as 51-year old male corporation president, was first seen in consultation on May 17, 1956, because of an acute shoulder-hand syndrome of sudden onset two months following a severe coronary thrombosis. He was given 15 mg. of Sterane daily and 1 gm. of Bufferin every four hours. Remarkable relief of his pain and of a swelling of the right hand occurred within 48 hours. Sterane was stopped at the end of one week but Bufferin was continued in the same dosage. The patient returned to work on June 10, 1956, on a sedentary basis (because of the cardiac episode) with no pain or restriction of the right shoulder or hand.

THESE results are typical of what has been accomplished in a large series of patients with similar disorders that have been treated during the past year. Some of the case histories have been published elsewhere.[8]

In about 75% of cases therapy resulted in notably quick subsidence of symptoms. Usually pain was completely and permanently relieved within three or four days. Also notable was the safety of this course of treatment. While the use of earlier glucocorticoids was associated with disturbances of sodium, potassium, and water balance, such effects have not been observed with moderate amounts of Sterane either in this study or in others. Also it has been reported that prednisolone has caused gastrointestinal disturbances in a number of cases, and in rare instances has aggravated ulcers that were previously asymptomatic. Care has been taken in the present study to watch for unwanted systemic effects, but in no case has there been evidence of any. The absence of undesirable glucocorticoid side effects is attributed to the small daily doses that were used throughout this work, and to the short interval of treatment. The absence of gastric irritation, which can be caused by both Sterane and salicylate, is attributed to the antacid effect of Bufferin.

Summary

PERIARTHRITIC pain and inflammation of a type that commonly causes temporary employment disability has been treated successfully with large doses of Bufferin and selected doses of Sterane. In more than 100 cases treated to date, recovery time was dramatically shortened to three or four days in most cases. No side effects of any kind were observed. This therapeutic plan is recommended as an aid in the treatment of patients who are disabled by non-articular rheumatism, so that they may return to full employment in as short a period as possible.

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Industrial Hygiene Units in Industry

From a report by the AIHA Development Committee

THE AMERICAN INDUSTRIAL HYGIENE ASSOCIATION Development Committee (F. A. Patty, Chairman; W. G. Hazard; J. C. Radcliffe; J. C. Soet; A. J. Vorwald, M.D.) published in *American Industrial Hygiene Association Quarterly*, June, 1956, the results of a survey of industrial hygiene units in industry. Following is the text portion of the survey findings:

A QUESTIONNAIRE designed to develop information useful to industries contemplating new or reorganized industrial hygiene units was mailed to members of the AMERICAN INDUSTRIAL HYGIENE ASSOCIATION known to be employed in key positions in industry. The questionnaire was arranged so as to avoid identity of the person or organization participating. Of the 133 questionnaires mailed out, 57 were filled in and returned, 10 were returned uncompleted, and 66 did not reply. Some returns neglected to reply to some questions. The tabulation of results is shown in the table which follows.

Of the 10 questionnaires returned uncompleted, one was a duplicate mailed to a second member of a participating group, three were returned because of uncrystallized programs in the development stage, three were returned by the postal service unopened, two were returned "because of security regulations" and one because the industrial hygiene activities were rudimentary while the health physicist in charge was of the opinion that the program was completely satisfactory to management. A number of questionnaires were not returned because more than one had gone to certain units and also because several industrial members of AIHA do not have active industrial hygiene programs.

The number of employees per member of industrial hygiene staff varies widely with no definite central tendency. However, about 53% lie between 4,000 and 15,000. In general, the larger industries have more employees per industrial hygiene member than do the smaller industries. Several of the industries with less than 5,000 employees per member of the industrial hygiene staff are engaged in manufacturing chemicals and drugs and are conducting toxicological research. Several in the group above 20,000 plan to add to industrial hygiene personnel.

The activities in which these 57 units are engaged are most interesting. Several units engage in all of the activities named, while others are active in only a few. A rather surprising number are conducting efficiency tests of air cleaners as well as air pollution work of various sorts. The time spent on air pollution work for the majority of those concerned amounts to less than 10% but ranges from less than 1% to 95%. The replies concerning biological analyses and clinical tests were apparently confused by some misinterpretations of "clinical" tests. They are believed to be inaccurate. The chemical and drug group appear to participate less than the average in making detailed recommendations for ventilation.

About 40% of top management's interest in industrial hygiene centers in the personnel and industrial relations group. Production is second with 24%. It is noteworthy that in about 10% of the industries, management's interest is concentrated in the Board of Directors or the President, while in another 10%, the Medical Director is the principal interested management representative. The man under whom the industrial hygienist works is, in 54% of the industries, the Medical Director; 10% are directed by the Director of Personnel, personnel services or industrial relations; another 5% are directed by the Manufacturing Manager; but the many different ways in which the industrial hygiene activity has been set up in the industrial organization are striking. The position of the chief industrial hygienist on the organization chart ranges from the sixth level up to the second level. His position in the organization is apparently influenced by many things, including the type and size of the industry and the time the activity was initiated. Each of the sixth level locations for industrial hygiene is in a large company in which the activity dates back more than 20 years. It is not surprising that replies from the people in these units indicate a certain amount of frustration because of inability to accomplish the objectives that are possible in industrial hygiene. It is of interest that 70% of industrial hygiene units in industry have been initiated since 1940.

Another item of interest is that in over 15% of these industrial hygiene units the field men do all the analytical work also, while in about 50% of the units the field personnel do less than 10% of the analytical work. These differences do not appear to correlate with the size of the organization or other available information.

The total space devoted to industrial hygiene for office and laboratory averages around 245 square feet of floor space per person, but the range is 70 to 1,000.

In 30% of the cases the industrial hygiene report is "approved" by other than industrial hygiene personnel before it is sent to the departments concerned. Since over 50% of the industrial hygiene units are directed by medical personnel a significant number of these directors apparently do not choose to judge and rule over the contents of the report, but prefer to leave this responsibility with the industrial hygiene unit preparing the report. Whether the recommendations are mandatory (23%) or advisory does not appear to be related to the size of the industry, the relation of the Medical Director to the industrial hygiene activity, nor to the age of the unit.

The availability of major expense analytical instruments is not surprising. Specialists are required to operate much of this equipment and when it is located in another department it can more readily be applied to problems outside industrial hygiene.

Perhaps the outstanding fact brought out by the survey is that 45 of the 47 persons responding to the question of whether the set-up is workable and desirable are satisfied with their industrial hygiene unit and the way in which it operates. The most significant suggestions for improvement center around the problem of having only a liaison with plant engineering personnel. There is a considerable strain placed on this tie when the plant engineering personnel must call upon the Medical Director for any engineering help they wish from industrial hygiene. This is especially so when the report is in turn forwarded by the Medical Director. Other suggestions included a need for more toxicological research among the chemical and drug group, and more personnel in all groups.

One reply stated that in the interest of efficiency and reduction of waste, health physics should be combined with industrial hygiene and should, along with safety, report to the same director of administrative functions rather than operation functions. Other suggestions stemming from units finding themselves in the sixth level of the organization express need for reorganization and centralization of industrial hygiene activities, and a greater need of interest from top management.

Overpaid?

A RECENT article in "The Medical Way" reports on a comparison made between the earnings of a typical doctor and a representative bricklayer for a period of 20 years. After a two-year apprenticeship and a period of being a journeyman, the bricklayer's total income for his first 10 professional years is about $66,976. A typical doctor's income for his first 10 dedicated years is $5,000—none from his eight years in college and medical school, and $2500 for each year of his residency. If he begins practice in a prosperous American community at the end of his residency, he can expect to average earnings estimated today at $15,000 per year for the next 10 years. At the end of 20 years in his profession, the bricklayer has earned a total of nearly $140,000; the doctor, $155,000. However, if the bricklayer worked the average doctor's 56-hour week, he would earn an annual salary of over $12,000, a fraction less than a doctor's for the same number of hours of work. "However," states the article, "the purpose of this comparison is not to stir up an argument over the bricklayer's pay. He is a skilled and respected artisan and is certainly entitled to whatever he earns."

—From "Medical Economics," in *Minnesota Medicine*, July, 1956.

The 1956 Ramazzini Rendezvous

Tapoco Lodge, Tapoco, North Carolina

OCTOBER'S second weekend was the time, and the glorious autumn beauty of the Great Smoky Mountains the setting of the anniversary rendezvous of the Ramazzini Society. To mark the event there came from all parts of the country 29 Ramazzinians and 10 guests, all (by their own admission) renowned specialists in occupational medicine.

Approaching Tapoco Lodge.

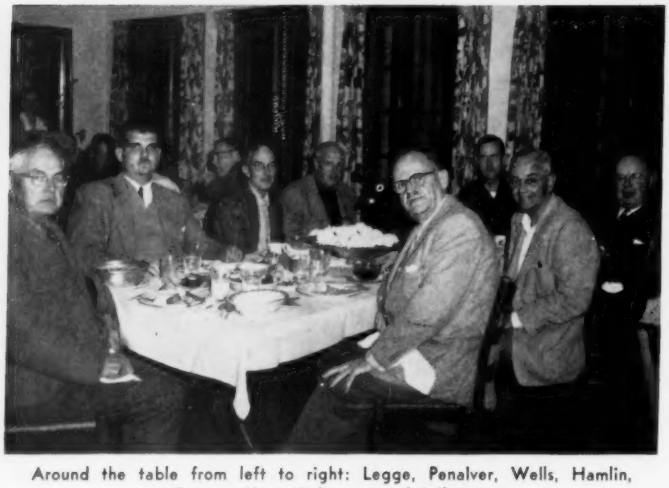
The activities were such as have become the custom for Ramazzini meetings, plus something new. Customary were the warm camaraderie of close professional associates, the informal and variously-sized group discussions of problems, the banter and ribbing possible only among close friends, and the feeling of unity under the shadow of the patron whose name graces the organization. Novel were the enthusiastic participation in simple lawn games and the re-discovery by busy physicians of the rapport achievable in essentially meaningless contests among intimates. Games and short, woodsy hikes were especially inviting and easy of accomplishment at this year's site. The results were relaxation, renewed feelings of strength and solidarity, and a revival of the enfeebled conviction that all might one day be well with the world.

The headquarters for this year's conclave of Rams was Tapoco Lodge, North Carolina, owned and operated as a public facility by the Aluminum Company of America, and located near the Company's complex of dams and powerhouses along the Little Tennessee and Cheoah Rivers. The area is a heavily forested, mountainous terrain, for the most part enjoying the protected status of a national forest. The woods are an exciting mixture of conifers and deciduous hardwoods. Mountain flowers abound to the satiation of the most ardent botanist, and varieties exist for the production of blooms in all seasons save winter. The rich fall colors of the changing

All of the Ramazzinians in Tapoco and their guests.

The 1956 servants. Left to right: Irwin, Kammer and Lauer.

Conversations never ended.



Around the table from left to right: Legge, Penalver, Wells, Hamlin, Dawson, Yant, Gehrmann and Belknap.

hardwoods, the bright petit point of flowers at forest margins, and the general spread of evergreens on the steep slopes provided the meeting's esthetic background. The gracious hospitality of the host-Company extended to the exclusion for the weekend of all other guests, and Rams conclaved in unintruded isolation.

THE IDEA of the Society of Ramazzini was conceived by a small group of the country's foremost practitioners of occupational medicine whose identity tends to be kept hazy by those best informed. The Society was to comprise a small, select group of specialists in our new field of medicine, bound in the very loosest of organizational ties, operating with greatest informality, whose single cohesive force was the recognition that these were men one needed as friends and associates if one's professional life was to develop its fullest meaning. It may with confidence be stated that the Society possesses the desired characteristics in great abundance, and that the dream of the founders is a reality. The Society has no officers, no by-laws, no dues. Its existence is most nebulous, even questionable, during the 360 days between meetings. Organizational survival during this hibernation is at the mercy of two or three Rams each of whom bears the title, Servant. Servant status is achieved by application in open meeting and approval by voice vote and insult. To the Servants falls the lot of arranging the annual meeting and caring for a loose bundle of papers said to be the Society's records.

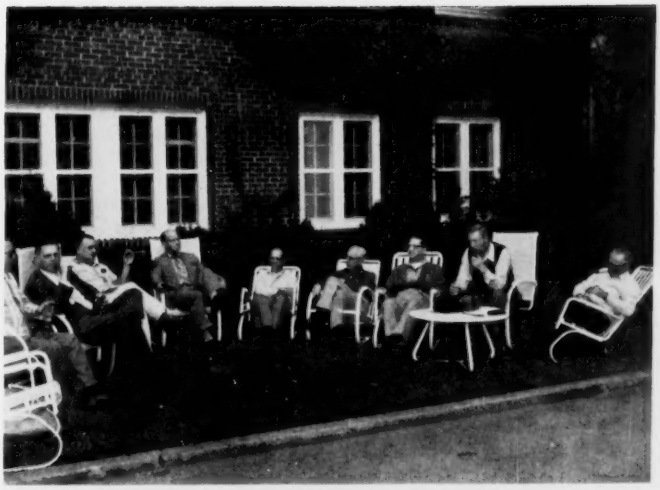
What the Society lacks in written by-laws is in some measure made up by firmly established practices which, when they will have existed a few decades more, hopefully may come to be designated as tradition. Most rigid of its present practices is the Society's limitation of membership to 31. Those making inquiry about the odd total are usually

told, soto voce, that the founders were of firm belief that a round number had been used in the construction of the original roll. A certain kindness has apparently served to deter any investigation to discover whether the odd number resulted from an incapacity to count so high. In any case, it is reasoned, if a baker may have his own kind of dozen, why not a Ramazzinian 30?

A requirement of continued membership in the Society is attendance at meetings. A single absence is tolerated when the excuse is established and approved. Membership rarely survives two consecutive absences. The resultant disgorgement makes room for the election of new Rams from the list of those sponsored by surviving members. As may be supposed, this list is long and the pressure of advocates great. Election is by written ballot several months after the meeting, when members have in all likelihood recovered from the aftermath of a conclave. The process of weeding out and planting anew has developed an organization of enthusiastic members, jealous of Ram status. The result is that this year, for the first time, no vacancy exists although the number of highly desirable candidates is large.

THE passing years have seen a growing tendency to hold Ramclaves at places off the beaten track; so that the logistics of assembly comprises no little part of the task of the Servants. This year's operation utilized Knoxville as a base from which was staged a Ramlift of wondrous intricacy — an exercise which for lesser minds would by itself have served as justification for the meeting. All Rambodies were delivered intact and on time despite the most elaborate practices ever used to conceal from servants the raw data of arrival schedules.

The central activity of Rameetings is conversation, wide-ranging, profuse, and satisfying.



Winter had not reached Tapoco Lodge in October.

Food was at its best in the Smokies.

A group of food-contented Ramazzinians and guests. Left to right: O'Connor, Draper, Lauer, Page, Sander, Tebrock and Leggo.

The newest elected Ramazzinians—W. Harvey Cruickshank and E. A. Irvin.

To list all topics covered by concurrently chatting groups would require impossible reportorial ubiquity. A random sample, believed in all honesty to be representative, must suffice. There was much talk about the new specialty board, its examinations, preparation for these examinations, the possible chemical explanations of autumnal color changes in leaves, the apparently diminishing potency of gin, the wisdom of playing golf without golf balls, the vagaries of the law and the chicanery of its practitioners as contrasted with the nobility of medicolegal experts, a new and strange pulmonary disease that has possible industrial implications, and the growing lack of water in California and the consequent hope of drying out some of its citizenry. There were comparisons of what different industrial concerns do about identical problems, a search for answers to baffling questions from the unpublished experiences of others, and probings for the underlying theory of occupational medicine. Definitions were challenged and boundaries temporarily established only to be immediately obliterated. The search and supply, the seek and give, and the even trade went on almost without lapse for the waking hours of the meeting, all in deeply satisfying measure.

THE highlight of the conclave is the annual oration which stands alone as a formally planned event. This year's orator was Dr. William P. Yant, who for many years has applied his unusual capacities as a scientist and researcher to the problems of industrial health and safety. His oration dealt with one of man's future problems — perhaps the greatest one to be faced in the coming centuries — the increasing speed with which the world's sources of mechanical energy are being consumed. The complete oration, a gem of scholarship and erudition, will appear in an early issue of this journal.

Ramguests this year were Doctors W. Leigh Cook, Jr., William Dawson, Thomas A. Lincoln, Joseph S. Lyon, Robert B. O'Connor, Logan T. Robertson, Charles R. Sullivan, Jr., Leo Wade, R. Lomax Wells, and Julian Williams. The Society's overseas members, occasionally designated its foreign legion, were this year represented by Dr. Rafael Penalver of Cuba.

A delightful surprise to the assembled Rams was a message from Dr. Sven Forssman containing the announcement of the formation of a Ramazzini Society of Europe, together with a greeting from these men and their wives. The members of the organization are: Doctors Frederick Bonjer, Leiden; Arne Bruusgaard, Oslo; Sven Forssman, Stockholm; Etienne Grandjean, Zurich; Leo Noro, Helsingfors; and Enrico Vigliani, Milan. This roll of names augurs well for the future of the new Society. Our best wishes go to them. What Ramazzini has meant to a group in far away America will undoubtedly be realized in greater measure by those whose work is close to his beloved Modena and Padua.

Begin to Think

THE THINGS that collectivists the world over most fear is that good Americans will begin to think; that we will begin to concentrate and act upon, not the winning or losing of an election, but individually living up to the traditional honor and freedom of our country; that we will no longer fall prey to the propaganda web they have spun; that we will abolish our progressive income tax and keep our money at home; that we will resolutely refuse to vote for their power-aspiring jokers; that we will insist on a foreign policy of minding our own business; and will willingly suffer the consequences of making our money honest so that our children will not have to wreck their lives paying us "benefits."

—From "Dietary Revision-Downward," an Editorial, by JOHN K. GLEN, M.D., in *Texas State Journal of Medicine*, July, 1956.

Industrial Medical Association

President's Page

IN 1932 the American College of Surgeons began a survey of industrial medical programs throughout the United States. If these met certain minimum standards, a Certificate of Approval was given the industry. All concerned were proud to exhibit this Certificate as evidence of a good Medical Department with a satisfactory program.

In 1945 the Industrial Medical Association established the organization known as the American Foundation of Occupational Health. This was a non-profit educational and professional trust which was tax free. Funds submitted to the Foundation could be used for educational and other purposes as deemed advisable by the Foundation's Board of Trustees and the Industrial Medical Association's Board of Directors.

In 1951 the American College of Surgeons, having approved some 1400 Medical Departments, wished to discontinue its Certification program, and offered it to the Industrial Medical Association. The Board of Directors thought this would be an excellent project for the IMA, working through the American Foundation of Occupational Health. Financing was undertaken by subscriptions from industry. Standards were established which were thought to be minimal for a good health maintenance program. Prior to 1954, some 140 plants were surveyed and Certificates awarded them under the auspices of the American Foundation of Occupational Health.

However, the cost of the program was substantial, and financing it became difficult. The Board of Directors were told the word "Foundation" involved the distribution, rather than the collection, of funds, and, in order to obtain support from Foundations and other organizations, it would be necessary to change the name of the Foundation of Occupational Health, omitting the word "Foundation."

Consequently, in 1954 the name was changed to Occupational Health Institute, Incorporated, domiciled in the State of New York as a non-profit tax-free corporation for the purpose of carrying out educational functions along industrial medical lines and also to work as part of the Industrial Medical Association to certify industrial plants that had medical programs conforming to IMA standards. In order to make this satisfactory, not only to industry but also to the medical profession, a Board of Managers or Trustees was formed to administer the functions of the Occupational Health Institute. At no time were there to be more Trustees from industry than from medicine. The fact is that the medical profession is represented by a majority of the members of the Board of Trustees, this being a permanent requirement under the corporate charter. The President and the President-Elect of the Industrial Medical Association automatically become members of the Board of Trustees of the Occupational Health Institute. The business and affairs of the Occupational Health Institute are controlled by the Board of Trustees with the aid and counsel of an Advisory Committee.

The medical phases of the Institute's program, including the accreditation of medical services, are always directly the function of the Industrial Medical Association. In no place does the Board of Trustees of the Occupational Health Institute, in itself, have anything to do with the matter of Standards and the accreditation of the industries except in the matter of presenting the Certificate which is done in the name of the Industrial Medical Association and the Occupational Health Institute. If and when sufficient funds are available, the OHI charter permits and encourages educational programs in industrial medicine in plants, schools, or any place considered advisable by the Board of Trustees. Scholarships or fellowships may be established, but this, of course, is not to be done unless sufficient funds are available.

Certificates now have been granted to some 313 different plants and organizations, and there are 56 applications being processed. The satisfaction and enthusiasm these plants display in receiving these Certificates offer abundant evidence that the project is much more than worth-while.

A feature article describing the Occupational Health Institute and its plans, progress, and personnel, will appear in an early issue of the Association's official publication, *Industrial Medicine and Surgery.*

E. S. Jones M.D.

Books

Predicting Accidents

THE ACCIDENT SYNDROME: The Genesis of Accidental Injury: A Clinical Approach: MORRIS S. SCHULZINGER, M.A., M.D. Charles C. Thomas, Publisher, 301-327 East Lawrence Avenue, Springfield, Illinois; Blackwell Scientific Publications, Ltd., 24-25 Broad Street, Oxford, England; Ryerson Press, 299 Queen Street, West, Toronto 2B, Canada; 1956, pp. 234, with 45 illustrations, $6.50.

Following is the review of this book in the *Journal of the American Medical Association*, October 13, 1956:

"The author, having studied some 35,000 consecutive accidents over a period of 18 years, is well qualified to speak on the causes, cure, and prevention of what he so aptly calls the accident syndrome. His conclusions are interesting and particularly timely, since we are faced with a rising tide of automobile injuries and deaths. First in importance in prevention is machine design, which should also be related to the human form, and second is education of those persons exposed to danger. The author's conclusion that most accidents occur to maladjusted young men with unbridled aggressiveness is certainly true, and the statement that the so-called accident-prone group is a rapidly changing one is most interesting. Much medical research is needed in order to understand the speeding, the drinking, and the reckless driver. He must be studied from the standpoint of behavior, habits, physical status, environment, and inheritance. For the student of accidents in general, and of automobile accidents in particular, the book is highly recommended."

Excellent Idea

PERSONAL HEALTH RECORD: CARL A. DRAGSTEDT. The Military Service Publishing Company, Harrisburg, Pennsylvania, 1956, pp 64, $1.00.

This booklet looks like a United States passport: the size of a passport, the color of a passport, and the feel of a passport. In fact, it is a passport—a passport to health. It appears to be a new idea, but what a good one; that every person should possess and keep up to date a precise record of every medical event from the time of a broken collarbone in childhood, to the date of tetanus toxoid in the army, and on to the time of the prostatic operation at age 65. If every person maintained such a record, and it were complete and accurate, half the onerous medical history taking in hospitals would be eliminated. By the way, where is your birth certificate stored? Who has the chest x-ray films made 11 years ago? Both might be needed soon.

Get 'Em While They're Hot

THE ISOTOPE INDEX: Scientific Equipment Corp., Indianapolis 19, Indiana, June, 1956, pp. 63, $2.00, ($2.50 foreign).

Many an industrial physician would like to know more about the isotopes and particularly so to be able to participate knowingly in the activities in which his own organization may be engaged. So complex is the matter, so much information is required even to know a little, that many industrial physicians keep aloof because of uncertainty. This small book may make some contribution to the easing of that situation. This is no primary text on the nature of isotopes and their actions. Instead it is an index of all isotopes, the nature of their emanations, sources of supply, costs and guidance in procurement. Most useful and little known to physicians is the fact of availability of stable isotopes without the necessity of meeting the rigid requirements of the AEC surrounding the more dangerous isotopes. Much of the needed medical research connected with istopoes may be carried out with these stable isotopes without any extraordinary precautionary measures.

This book is no Alpha to Omega presentation of radioactivity but it well lives up to its purpose of telling what isotopes now are available and how to get them. Still more information is available through correspondence with the publisher, Scientific Equipment Corporation, 5438 Lowell Avenue, Indianapolis 19, Indiana.

Industrial Exhausts

INDUSTRIAL VENTILATION—A Manual of Recommended Practice (4th Edition): American Conference of Governmental Industrial Hygienists, Committee on Industrial Ventilation, Lansing, Michigan, 1956, unpaged (about 105 pages), $4.00.

This Manual has been developed to meet a demand for a compilation of practical data and information on the design, maintenance and testing of industrial exhaust systems. Its original purpose was to put into the hands of official industrial hygiene agency personnel, a single volume of standards. Its aim was to help and educate engineers and industrial hygienists throughout the country. This Manual is an industrial exhaust system handbook at an engineering level.

The Manual is not intended as an instrument for regulation, but rather one for information. Individual experience may dictate other values or data, and some special applications of ventilation practice have not been included. The Manual is for practical use in the field and an attempt has been made to avoid detailed discussion wherever possible. References are provided for those who are interested in more detailed information.

Attention

Scientific Exhibitors!

Anyone contemplating a scientific exhibit at the 1957 Industrial Health Conference in St. Louis, April 20-26, 1957, should address inquiries and applications for space to R. EMMET KELLY, M.D., Medical Director, Monsanto Chemical Company, St. Louis.

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Management's Blind Spot

EARLIER this year the *Journal of the American Medical Association* carried an editorial entitled "Industry Needs Physicians."[1] Although several facets of the industrial medical situation were touched upon in the editorial, what is said here is directed to only one of them, namely, the existence of the need — "the growing need — for physicians trained in preventive medicine and administration." The editorial states that this need "presents the medical profession with a challenge." It is probable that the statement is incomplete; a little thought on the matter makes it evident that the need for physicians in industry also presents industry with a challenge.

The editorial suggests a few of the duties and responsibilities of the full-time industrial physician — principally the adaptation of the worker to his work, his adjustment to his environment, his physical fitness, his health appraisal, his relation to efficiency, etc. All these and their connotations at once bring to mind the thousand-and-one overlappings and interweavings of each with the other that make up the fabric of the Medical Department's day. There is more than the hint that the industrial physician's assignment to "keep the employee well when he is, and get him well when he isn't" requires education and ability — and dedication — far above average. Indeed, at the Conference mentioned in the editorial — on the Education of Physicians for Industry, at Pittsburgh last December — Dr. Robert A. Kehoe said: "The full-time practice of occupational medicine requires more intellectual competence and a greater variety of knowledge than does any other field of medical practice."

Insofar as the possession of this intellectual competence and variety of knowledge is reflected in Specialty Board status, the competence is proved and the knowledge is acquired through 10 years or more of preparation and training. Board certification is based on graduation from an approved medical school, *plus* internship of at least a year, *plus* two years of graduate study in occupational medicine, *plus* a year of supervised experience in industrial medical practice, *plus* three years of special training in, or teaching or practice of, occupational medicine.

The business of getting ready for "The full-time practice of occupational medicine" requires dedication of a high order. Also, for the man who is getting ready, it costs money. How much money it costs is indicated in a recent study[2] from which the following may be drawn: Two young men finish college; one goes into a job; the other into medical school. The first starts to earn; the other continues to spend. By the time the latter is ready to begin earning he will have invested from seven to 10 years of his time and will have spent from $30,000 to $35,000 in his education and training. The study concludes: "It costs a doctor $40,000 to earn his first fee."

Meanwhile, and concurrently, the man who spent only about $6000 to get ready to go into industry from college — and thus to earn his first salary — will have earned at least a comparable total amount, and more, will have established himself somewhat firmly in his industrial position. If now it may be supposed (1) that the company of the man who went immediately into industry has need for a Medical Director, and (2) that it is within this man's responsibility to select such Medical Director, and (3) that this man's classmate, having devoted the intervening

1. *J.A.M.A.*, 160:16, 1411 (April 21) 1956, quoted in *Indust. Med. & Surg.*, 25:7, 322 (July) 1956.

2. *Medical Economics*, July, 1956.

years to getting ready, is available for the position of Medical Director, is it to be expected that the man hiring will be willing to start the man hired at as much as, or even more than, he himself is being paid? On the contrary, and regardless of all other considerations, the hiring man's attitude will be the usual company attitude — epitome of the moss-grown management-cliches: "All we need is a doctor." "That is what the position pays." "We'd like you to begin at a figure we can increase as you make good." Almost invariably the "figure" will prove little more than the amount a good mechanic commands. Interestingly, too, it will be only a small fraction of the huge fees frequently paid the pseudo-expert who bedazzles the company president with his juggling of so-called "tests" of various kinds.

Illuminating as to the actual "figure" is Doris M. Thompson's analysis of a recent survey by the National Industrial Conference Board regarding the magnitude of the investment by 131 companies of various sizes in the providing of medical and health services for their aggregate of 885,830 employees.[3] Of the companies furnishing information, 81 reported the salaries of their full-time physicians. "These 81 companies have 123 *full-time doctors whose salaries range from less than $6000* to more than $30,000 annually." (Italics ours.) Of the 123 full-time doctors, 64 earn between $10,000 and $15,000. As to those who are Medical Directors, 20 are paid from $15,000 to $20,000; 11 from $20,000 to $25,000; five from $25,000 to $30,000; and one receives more than the last-named amount. The average for 63 Medical Directors would be about $16,000. That these are representative figures is borne out by the following: Several months ago some 20 of the full-time Medical Directors in the Chicago area disclosed — anonymously — the range of their salaries. *The lowest amount was $8,800 a year;* the highest $40,000; the average just under $18,000. (Italics ours.)

There is the implication in the *JAMA* editorial that the need for physicians "trained in preventive medicine and administration" would not exist if there were more physicians so qualified. "A start must be made in the medical schools." Not only has the start been made in the medical schools, but the last few years have shown great progress. A decade ago there were hardly more than a dozen industrial physicians in teaching positions. Now there are several hundred. The fact is that today there are enough physicians qualified to fill the needs of industry, and many more are in training.

Why, then, does industry need physicians? The answer is obvious. The higher salaries being paid are far from enough; the lower ones are niggardly. Some even now being offered are worse than that — they are insulting. What is really needed is an economic ophthalmologist to show managements how to look around the blind spot that prevents so many of them from seeing the unwisdom of their reluctance to pay enough to attract and hold the physicians they need. In short, if industry needs physicians, it isn't nearly so much for lack of physicians as it is for inadequacy of pay. When industry corrects the one, the other will take care of itself.

3. *Management Record* (National Industrial Conference Board), 18:4 (April) 1956; also *Indust. Med. & Surg.*, 25:7, 317 (July) 1956.

Observations Matutinal

WITH disregard for exactness, it may be said that all the people of the land could be sorted into two broad categories, the matutinophilics and the matutinophobics. The former awaken bright-eyed, clear-minded, eager, ready for food and activity. The matutinophobics in about equal number, scarcely awake, are dour, dazed, incompletely coordinated or oriented, hating man, beast and clock, screaming for coffee. The morning-hater abhors the brightness of the morning-lover. In turn, the morning-lover has fine contempt for the morning phobic with all his gropings and whinings. Not necessarily is either group pathologic. One of life's tragedies arises when a matutinophilic marries a matutinophobic. One partner shines at 7:00 in the morning and the other at 11:00 in the evening.

No man knows what sleep is or how it is brought about. That is as deep a biologic mystery as how odors are perceived and identified. In a measure, sleep is but an undressed rehearsal of death. At least scores of poets have pursued that conception to common acceptance. Unattractive to the poets, however, are the numerous physiologic phenomena that attend the arrival of sleep. No poet has sung about sleep's lowered rectal temperature, or been moved by the reality of urinary diminution. Only the physiologist finds appeal in the lowered blood pressure, the slow pulse rate, the curbed metabolic processes, the minimal muscle tone, the mildly ischemic brain, the gently swollen extremities, the depressed lachrymal and salivary secretions, half functioning reflexes. All these changes and others attend sleep, but they are only a part of normality.

The sleeper unwittingly and without calculation, has entrusted his being to his diencephalon. That portion of the brain, competing with the insomnia-producing anxieties, worries and fears, takes over the job of producing and monitoring sleep. It is the diencephalon that tells the sweat glands to go ahead with their work of getting rid of unwanted body heat, and the heart to take some rest. It is the diencephalon that makes the matutinophobic. The diencephalon likes its

role and relinquishes its nocturnal clutches only with reluctance. The morning-hater becomes its victim. The open-eyed morning-lovers, however, without knowing how it was accomplished, have mastered their diencephalons.

There are utilitarians who may believe that the frank differences between the morning-haters and the morning-lovers should be turned to practical account. Some of their more serious-minded may even perceive no whimsey in the proposal that on every application for work, just after the space indicating "male" or "female" there be another space to indicate "phil" or "phobe." Thereafter all the "phils" are assigned to the first shift, and the morning moves of the wheels of industry are entrusted to their eager eyes and hands. The second shift is for the "phobes." No longer are they the half-walking dead. Long before their time to go to work comes around their mental and bodily agilities will have escaped from the detaining tentacles of the diencephalon. Unless there is a third shift to cloud up all this reckoning, a major personnel difficulty for all time will have been dissipated. Thus will pass the morning "drooper" and the midnight "slumper."

It is not intended to praise or condemn either matutinophile or matutinophobe. Left to the infallibility of the proverb writer, the morning-lover basks in praise:

"Cheerful at morn, he wakes from short repose,
Breathes the keen air, and carols as he goes."

But: "He that riseth late must trot all day, and shall scarce overtake his business at night."

However, the matutinophobe has his supporters. Maybe New York's Jimmy Walker was right when he said, "Early to bed, early to rise—and you'll meet no interesting people."

What is Preventive Medicine?

LONG AGO, the industrial physician recognized that his medical efforts foremostly fall within the area of preventive medicine. That is as it should be. Few industrial physicians and fewer private practitioners may provide any succinct definition of preventive medicine. Actually there is no sharp line of demarcation between preventive medicine and curative medicine. Every good physician practices both.

Wilson Smillie (Preventive Medicine and Public Health: the Macmillan Company, New York, 1952) makes all this clear in this language:

"What is preventive medicine? Preventive medicine encompasses those activities that are the direct responsibility of the individual in the prevention of disease and in the protection and promotion of the health of himself and his family.

"Who is responsible for the proper conception and execution of these activities? They fall, for the most part, upon the family health adviser. Usually this person is the private physician, who aids and guides all members of the family in all matters pertaining to individual health protection.

"Preventive medicine, then, represents individual responsibility for activities that are carried out for the family as the unit. Public health represents a community responsibility which is carried out for community benefit. In the first instance, the family is the unit; in the second instance, the community is the unit for consideration.

"The most important concept of this century in the field of medical care is that preventive medicine is an integral and essential part of the everyday practice of medicine. It is not a separate body of knowledge to be understood only by a skilled technician who has been highly trained in this field. There is no 'specialty' of preventive medicine as there is a specialty of surgery, radiology, or pediatrics. There is, of course, a specialty of public health, which is a well-organized body of knowledge and requires a high degree of skill. But preventive medicine must be interrelated with diagnosis, treatment, and rehabilitation. These are the four basic elements of every physician's continuous progressive plan for medical care for each of his patients.

"The great physicians of all times have understood and have followed the principle that the practice of medicine is not simply an exercise in diagnostic acumen, nor a test of therapeutic skill, but requires a complete understanding of an individual as a person who is a member of a family, and who lives in an environment that has a profound influence, for better or for worse, upon his health. They have also understood and followed the principle that he is entitled to the benefits of preventive medicine as an essential part of his medical care.

"Public health and preventive medicine have not been of great concern to the medical profession as a whole. The student of medicine of the past has shown slight interest in these subjects because he felt that they had little application to his future career, since they bore no practical relationship to the practice of medicine.

"In recent years there has been a complete reversal of opinion in these matters. Students of medicine now realize that they must be fully alive to the social implications of medical practice, and have become actively interested in the relationship of preventive medicine to clinical medicine."

THE INDUSTRIAL physician of good will experiences no difficulty in accepting these pronouncements. Particularly he will enjoy the clear

distinction between preventive medicine and public health, always an item of disturbance.

Having espoused preventive medicine in all its newer broadness, the industrial physician sometimes may be inclined to see prevention in all of medicine. For that there is justification, but much of prevention becomes the function of the private physician. That physician has his own obligations in prevention. In the instance of the removal from an industrial worker of a troublesome appendix in a quiescent period, the industrial physician has no justification for taking over the operation just because of the many obvious preventive medical aspects involved. That example is beyond debate, but there are less conclusive situations constituting shadowy zones. There may be good reason for the pursuit of group surveys of industrial workers, such as for tuberculosis. Is that preventive medicine? The private practitioner says "No." To him, that is "case finding—neither preventive nor curative medicine." A compromise becomes requisite. Case finding is good preventive medicine—good for the individual, good for his family, good for the community—but in its community significance it becomes public health. When the cases are found and thinking turns to "treatment," to "cure," there, unless the conditions were produced by work itself, the private physician takes over. Some prevention requirements will continue, but those fall to the ministrations of the private physician.

It would seem that out of all this there might be developed a general guiding formula—somewhat as follows:

Always excluding those conditions produced by work itself, when the time comes for therapy, cure, continued treatment, home care, hospitalization, the industrial physician has reached the boundary of his proper professional territory, and curative medicine takes over.

YET—as industrial physicians know, and private physicians are learning—any such formula will be complete and satisfactory only to the extent that it (1) provides openly for the many adjustments between theoretical limits and practical needs that are the daily fare of the physician in industry, (2) recognizes that "the extent of services to be rendered in a plant does require some nicety of judgment," and (3) accepts beyond cavil the industrial physician's "nicety of judgment" as expressed in such concessions to the economics of work as are involved in "the single visit" to the Medical Department that will relieve distress and/or "keep the employee on the job."

In short, preventive medicine in terms of the employee means keeping him well *and* keeping him working. Insofar as this responsibility of the industrial physician requires the participation of the private physician, whatever formula they use will be helped by mutual good will and joint common sense.

The True Wisdom

WHEN ONE has lived a well-rounded life, there need not be special problems during the change of life or during old age. One has learned to adjust, to adapt, to compromise and to sublimate, to be realistic about one's self and about others. This is the true wisdom of the advanced years. It is not intellectual but experiential; it comes from living life, experiencing and experimenting and gaining in self-confidence and self-knowledge. One of the frequent events in modern society is enforced retirement at a set chronological age. Maybe such relegation of some very capable and useful human beings is a social necessity; it need not be a tragedy for those affected if they can plant for themselves. For the vast majority, retirement is not synonymous with inactivity; it seldom means that the individual himself is psychologically or physically ready for inactivity. Few retired people nowadays feel discarded to uselessness, but continue to live interesting, vital, and useful lives, albeit perhaps in different areas.

—From "Dynamic Psychiatry in Simple Terms," by ROBERT R. MEZER, M.D., published by Springer Publishing Company, New York City, 1956.

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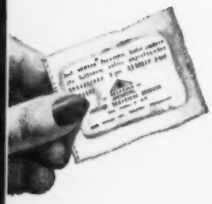

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News, Comment, Opinion

APTITUDE tests to determine elderly workers' fitness are proposed by American Medical Association, which believes chronological age of person is no true measure of type or amount of work for which he is suited.

—From *Industrial Relations News*, October 6, 1956.

Helsinki

NUMEROUS physicians and industrial hygienists of this country and Canada have indicated a purpose to attend the Helsinki International Congress in July, 1957. A few of these prospective travelers are making inquiries as to possible small groups that might be formed to enhance the pleasures of the journey. Since no travel bureau has been appointed for guidance in the matter, it is suggested that any person interested in forming a travel group, whether by boat or plane, communicate with Dr. Robert T. Legge, 6 Roble Road, Berkeley 5, California. While Dr. Legge is not forming any party of his own, he may be in position to bring together various individuals, with or without their families, who have a preference for traveling in the company of others on the same mission. As a reminder, it is observed that the dates of the Helsinki Congress are July 1-6, 1957. Since this travel will be required at the height of the tourist season to Europe, it is imperative that travel plans be made promptly. Even the present is a little late.

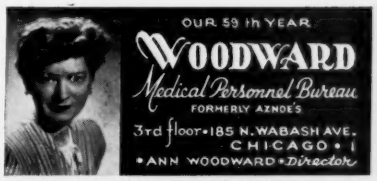
Cooperation

BOTH of these types of programs —industrial medicine and labor health programs — are a source of case-finding and referral for the private physician. This flow of information about patients will increase when the physicians in the community are willing to work more closely with the two groups of agencies. Such active cooperation not only strengthens patient referral and medical care, but it also provides special opportunities for a dynamic health education program.

—From "Recent Sociologic Trends in Medical Practice," by WILLIAM A. SAWYER, M.D., in *J.A.M.A.*, May 26, 1956.

Moscow Item

A RUSSIAN surgeon who deals with many cases of malig-



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General Surgeon: (g) seeks indus surgery, foreign post; graduated, Johns Hopkins; excel residencies; P.G. cardiovascular research, Johns Hopkins & Yale; 2 years, surgeon, USAMC; age 29.

Staff: (h) 29; Med degree, Michigan; yrs, res, indus med, years' fellowship, indus med (M.P.H.) exceptionally well trn'd in indus med in which specialty he seeks career.

Staff: (i) 28; 1 year, gen priv group pract; finishing 2 yrs, dispensary physician, USAMC (japan) seeks career indus med; Grad: Arkansas.

Staff: (j) 30; M.D., Temple; sev years, USNMC; 3 yrs indus staff phy, major Co., semi-heavy metal industry; immed available; prefers East.

Staff: (k) 30; M.D., Harvard; Bd elig internist; past year, priv general pract; prefers indus med in which specialty he seeks career.

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Medical Director: (e) Regional plant of large company; Michigan.

Staff Phy: (f) As chief, dept, well staffed, nurses, tech'ns; major company, 2600 empl; vicinity Houston, Texas.

Staff Phy: (g) Female, age 30-40, expe'd in indus med; lge plant; must arrange reside within commuting distance, town about 25 miles South of New York City; about $10,000 initially.

Staff Phy: (h) Evaluating occupational injuries and illnesses from medical-legal standpoint; very large heavy indus; 15,000 emplov; excel med dept; to $12,500; city 100,000; Pa.

Staff Phy: (i) To be responsible for the admin of the In-plant med facil; lge plant, aircraft indus; westcoast.

Staff Phy: (j) Regional plant, leading co; 4500 empl; dept staffed by 5 nurses; lge city on Gulf; req's Florida license; recommended.

Staff Phy: (k) Major Co; 40,000 emplo; dept well staffed and affiliated with medical school teaching program, indus med; recommended for those interested in indus med as career.

nancy said he did not believe smoking increased the likelihood of lung cancer. Air pollution, particularly fumes from motor vehicles, is more probably the cause, he said. The opinion was given to a group of California physicians by Dr. Valentin Sergeivich Mayatt, Dean of Surgery in the Second Medical Institute of Moscow. He said statistical studies of the problem had been made by other Russian investigators and that their findings pointed to air pollution. Lung cancer is increasing in Russia, as it is in some western countries, but possibly not so fast as in the United States, the surgeon said.

—From *Chicago Tribune*, October 21, 1956.

Executive Worry

MANY executives suffer from imaginary illnesses, reveals study of 3,700 medical examinations of executives by Life Extension Examiners in cooperation with Research Institute of America. Men who took check-up had roughly twice as many imaginary complaints as genuine ailments. Between 30% and 60% of executives had been worried about various physical conditions. However, number of serious ailments uncovered was very small. Actual rate of high blood pressure and heart abnormality averaged only 10%, for example. Only one out of five executives examined was overweight. Executive health plans may well change the trend of future health and prosperity of our industries, according to Dr. Paul Dudley White. The annual examination of all members of industry and other medical programs have helped eliminate hush-hush attitudes toward executive health, he says in Research Institute's report. Major stumbling block to effective medical programs for executives: hospitals, clinics and private or company physicians simply don't meet exacting needs of executives in either time or convenience, Dr. Charles E. Thompson told AMA's fall personnel conference last week.

—From *Industrial Relations News*, September 29, 1956.

No O

THE PROBLEMS encountered in a toxicology laboratory are broad in scope. By illustration, the laboratory may be requested to run anything from the routine blook alcohol determination to an investigation of an incident such as the one recently completed at the 406th. The laboratory was requested to determine the "exotic" agent responsible for the immediate deaths of three healthy men who had died all within a period of five minutes. A Japanese father and his two sons removed the concrete cover from a manhole that was some 20 feet deep and four feet wide. The father descended into the hole to attempt clearing of a drainage pipe at the bottom. Immediately on reaching the bottom he collapsed and died. The first son went down to attempt to remove his father and he also died immediately. The second son ran to a near-by fire station, obtained an Army all-purpose gas mask, descended into the hole, and also died. This manhole was located in an Air Force dependent housing area at Itami, Japan. An Air Force medic was lowered with a rope into the hole to rescue the three Japanese. He was equipped with a gas mask and he held his breath. In approximately one minute he inhaled and immediately collapsed. He

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was raised from the hole and recovered in approximately 20 minutes after artificial respiration and oxygen therapy. It was reported that he had a grand mal convulsion 15 minutes after having been revived. Blood specimens were received at the laboratory four days after the incident and were hemolyzed and decomposed on receipt. No interpretable results were obtained. It was not until air samples were collected from the hole and analyzed that the riddle was solved. There was no noxious agent responsible for these deaths — it was the near absence of a rather important element, oxygen. The oxygen content of the collected air specimens was less than 1%.

—From "Toxicology in the Far East Command," by LT. RICHARD PROUTY, Chief of Toxicology Section, 406th Medical General Laboratory, presented at a meeting of the Military Preventive Medicine Association in Korea, September 12, 1956.

NTA Fellowships

THE MEDICAL Section of the National Tuberculosis Association, the American Trudeau Society, provides a limited number of fellowships to promote the training of clinicians, medical teachers and scientific investigators in the field of tuberculosis and respiratory diseases. Awards are open to citizens of the United States for work within this country. Candidates holding the degrees of M.D., Ph.D., or Sc.D., are eligible for awards making possible continuation of graduate study in the field of respiratory diseases in an approved hospital or medical center. Such studies may be oriented toward teaching or research. Residency in an approved hospital under such a fellowship will be credited by the American Board of Internal Medicine toward certification in internal medicine and pulmonary diseases. Predoctoral fellowships are also offered to graduate students who hold a bachelor's degree and are working on a research project for an advanced degree other than an M.D. Each applicant must have the approval of the head of the department under whom he expects to work. All awards are determined by individual circumstances and are paid directly to the Fellow on a quarterly basis. Fellowships are granted for one year. Not more than two renewals will be considered. Fellowship applications must be received by January 1, 1957.

Health Plans

A FOUNDATION to promote efficiency and expand benefits of industrial health plans has been created by the International Association of Machinists and U.S. Industries, Inc., the latter a national manufacturing company employing about 6,000 persons in divisions in five states, Puerto Rico, and the Philippines. The purpose of the Foundation is to develop plans for the broadest possible range of health and welfare benefits including preventive medicine, psychiatric care, ophthalmic and dental treatment for workers and their families at the lowest possible cost and in the most effective and economical way. It is hoped that the Foundation's findings can be made available to other companies and labor organizations as a public service. Co-chairmen of

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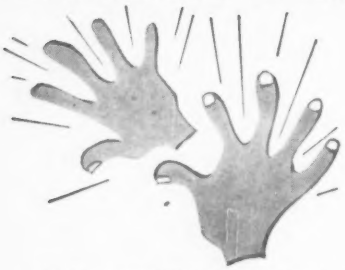

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—*Am. J. Pub. Health*, September, 1956.

Careless on the Road

GAS GIVEN off by a burning cigaret can spell sudden death on the highway. The gas is carbon monoxide. When inhaled—even in tiny amounts—it impairs night vision. Poor sight at night may mean a misjudged curve, an underestimated distance—and death. Smoking isn't the only source of the gas. Gas may creep into a car from a leaky muffler or from the exhaust pipe of another car just ahead. It's just one of dozens of forces that can bear down on the human being behind the wheel with fatal results . . . . Highway slaughter would be dramatically cut if safety officials knew more about mental and physical conditions that cause accidents. Researchers have a lot of ground to travel before they find all the answers. We know that drinking, fatigue, and certain diseases set the stage for many traffic fatalities. It takes less alcohol than previously believed to make a dangerous driver out of a safe one. Under average conditions, one to three ounces of 100-proof whiskey can make trouble. Fatigue not only slows down a motorist's reactions, but tricks him into believing he's as quick-witted as ever. Ailments like heart disease, epilepsy, and diabetes cause many accidents when an attack hits a driver. Just how many, isn't known. Even simple drugs sold without a prescription can be dangerous, since some induce drowsiness. Antihistamines and motion sickness remedies are among the offenders. Old age cuts into driving ability. An elderly driver's eyes, for example, can't stand headlight glare as well as those of a youngster. Harder to pin down are the mental influences on drivers. Emotional pressures may be causing a big percentage of our traffic accidents. These things don't show up on police accident reports. But knowing about them, in the long run, is just as important as building safe highways or passing speed laws.

—PAUL GAPP, in *Chicago Daily News*, Wednesday, August 29, 1956.

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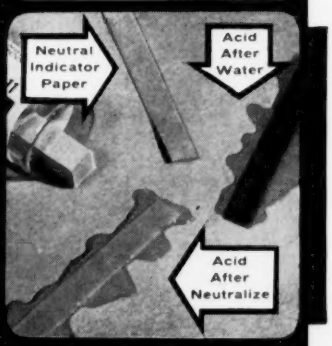

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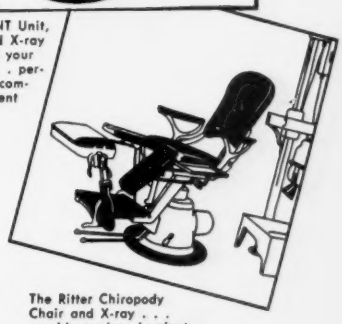

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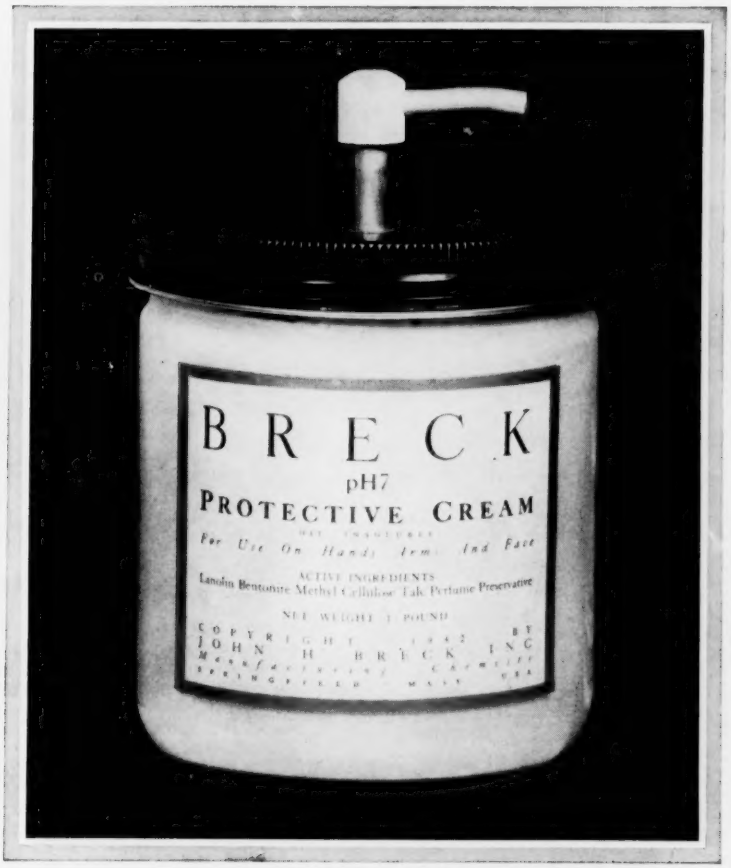

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1. Hellerman L., *Physiol, Rev.* 17:454. 1937.
2. Barron, E.S.G. & Kalnitsky, G., *Biochem.* J. 41:346, 1947.
3. Goodman, L. S. & Gilman, A., *The Pharmacal Basis of Therapeutics*, 2nd ed., 1955, p. 970.

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1. J.A.M.A. 159:645 (Oct. 15) 1955.
2. J.A.M.A. 158:386 (June 4) 1955.

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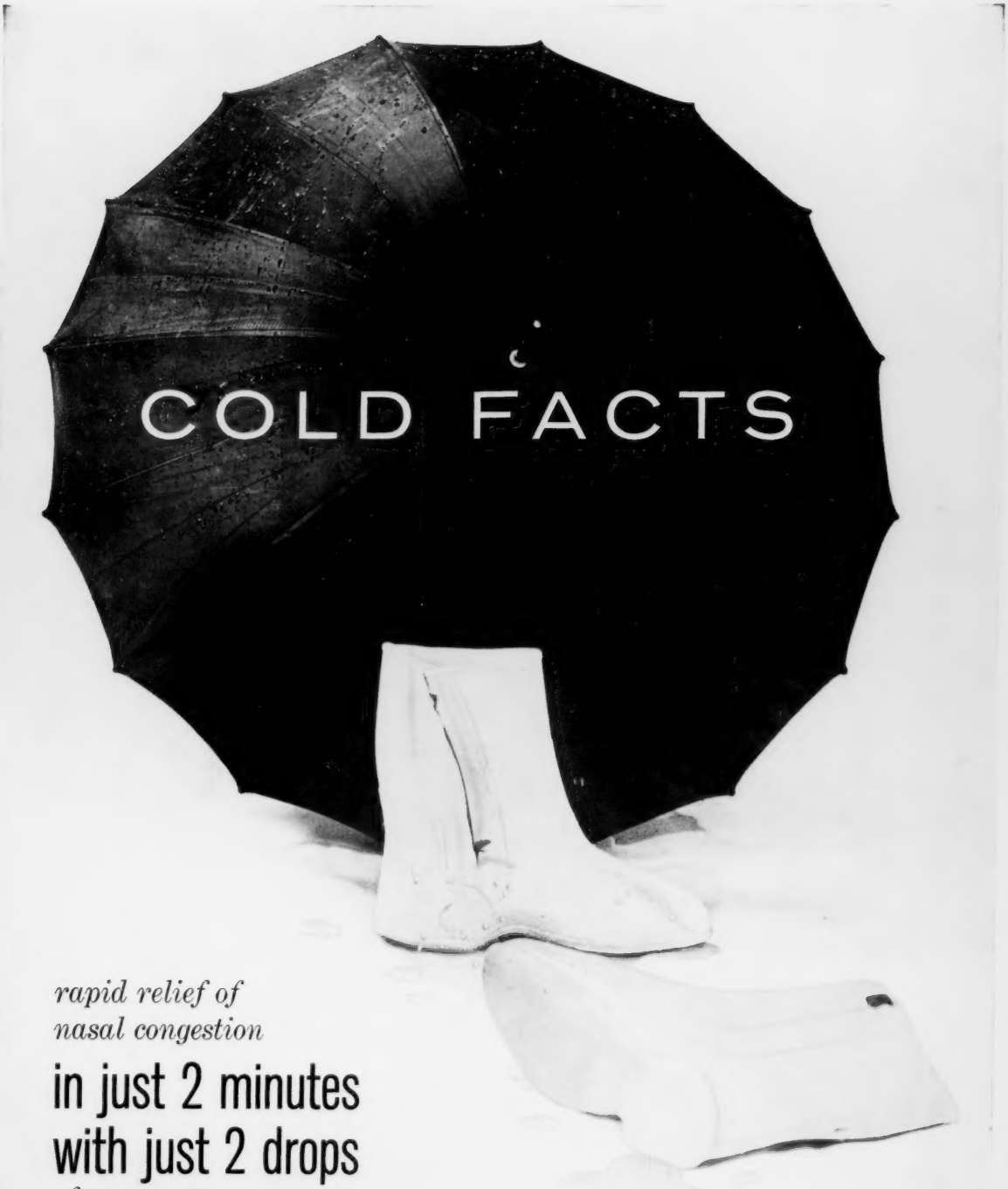

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(naphazoline hydrochloride CIBA)

Nasal Solution, 0.05%
Nebulizer, 0.05%
Nasal Jelly, 0.05%
Ophthalmic Solution, 0.1%, for conjunctival vasoconstriction

CIBA
SUMMIT, N. J.

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